CHINA
INDUSTRIAL HANDBOOKS
KIANGSU

FIRST SERIES OF THE REPORTS BY THE NATIONAL INDUSTRIAL INVESTIGATION

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FOREWORD

LACK of adequate capital and the inexperience of technical experts have been generally regarded as responsible for the tardy progress which. so far, Republican China has made in the way of economic reconstruction. But while it is true that China's slow industrial progress and the relative backwardness of her general economic conditions may, to a large extent, be directly traced to lack of industrial and financial capital and the relatively undeveloped state of her modern industrial technique, it is also undeniable that uncertainty as to essential facts and the absence of reliable statistical data to guide the calculation and formulation of concrete projects, are also definite obstacles in the way of China's industrialisation.

In view of the extensive character of China's territorial area the loosely-knit organisation of China's present natoinal economy, and other circumstances, the very essentials to a general mobilisation of capital and labour, any such movement to take place simultaneously in all parts of China would be impracticable and unrealistic, and doomed to failure from the very beginning. It has been my firm conviction, ever since I took office as Minister of Industry, that in order to bring about fruitful result, it would be a more practical policy to start work in one specific area to serve as a general foundation for the gradual industrialisation of the whole country. For this reason I have selected the Yangtse Valley as the national centre for heavy industries, and hope that within four or five years our efforts will be rewarded by some concrete achievements. In this way alone can closer co-operation in industrial and other economic matters between the people and the Government be brought about. Under the new circumstances created by the industrialisation of the Yangtse Valley, China will be adequately equipped to cope with any eventualities that may arise in the Pacific.

China, then self-sufficient even if cut off from the outside world, would be able to meet any situation brought about by forces and circumstances beyond her control.

In the drawing-up of plans for the development of industry, agriculture, commerce, and mining in the Yangtse Valley, I have been greatly handicapped by the lack of dependable statistics for reference and guidance. It was this which induced me to instruct Mr. Ho Ping-Yin, Director of the Foreign Trade Bureau, to make investigations and detailed surveys of China's mineral, agricultural and other resources, transportation facilities, market conditions, and other relevant matters.

The fruits of these investigations are embodied in this series of China Industrial Handbooks which are being compiled under the direction of Director Ho. Being a pioneer effort, and compiled under exceptionally difficult circumstances, this work cannot claim to be exhaustive, but it is the first comprehensive and authoritative reference-book of its kind, and as such will doubtless meet a need which has long been felt.

Ministry of Industry,
Nanking, June 30, 1933.

Chen Kung-Po.

PREFACE

"WHAT is the motive of the Ministry of Industry in making an investigation of domestic industries? And what is the use of such an investigation?" These questions some of our readers will quite naturally raise, and before I proceed to explain the methods used in conducting investigations a few words of explanation in reply to the above questions may not be out of place.

It is only too evident that the cause of China's weakness is poverty, the equally obvious result of a decline in national production which has rendered enterprises hardly capable of maintaining their existance. Lack of capital and of experienced technicians are other causes which have been regarded by most people as contributary causes of China's weakness. It is true that these are essential factors in economic progress, but to foster the growth and development of any enterprise fundamental knowledge and statistical information are also indispensable. For instance, in contemplating the establishment of an iron and steel plant, it is imperative to know where deposits of iron-ore and coal are available, their quantity and quality of those supplies, and the specific demand of the market. To act without such knowledge is like a seaman piloting a ship in strange waters without a chart, and failure is a certainty even with the advantages of sufficient capital and experienced technicians.

China is a vast country rich in natural resources, but there has never been any systematically conducted investigation of domestic industries, with the result that nobody has an exact and clear idea as to the real extent of this natural wealth. While such fundamental knowledge is unavailable it is well-nigh impossible for the Government to draw up any plans for national industrial development, nor is it possible for the individual promoter to develop domestic industries, with any confidence.

It was with the object of establishing a statistical foundation upon which the government can proceed with its reconstruction of the country, and also as a guide to private enterprise in industrial undertakings that the Ministry of Industry undertook this investigation.

On August 6, 1932, this Bureau was instructed by the Ministry to investigate the industrial condition of the whole country, and to compile and publish in book form the information and statistical data thus gathered. Realizing the Great importance of this work, after much deliberation and discussion, we drafted the following plan for conducting investigations:—

I.—Sectional Areas.—China has been divided into four groups of provinces, each province being a separate unit for investigation. The entire undertaking is to be completed in four periods. The four groups are

Kiangsu, Chekiang, Hupeh, Hopei, and Kwangtung.

Anhui, Kiangsi, Hunan, Fukien, Szechuen, and Shantung.

Kwangsi, Shensi, Shansi, Yunnan, Kweichow, Honan, Kansu, Sinkiang, and the Three Eastern Provinces.

Jehol, Suiyuan, Chahar, Chinghai, Mongolia, and Thibet.

II.—Scope of Investigation.

Manufacturing Industries.—Both handicrafts and industries involving the use of machinery are included. Great pain has been taken in acquiring accurate statistics regarding the number of factories or workshops and operatives, capital invested, supply of raw materials, manufacturing processes, varieties of products, selling methods, and principal markets. Localized handicrafts, like the porcelain industry in Kiangsi, wine making in Shaohing, and fan-making in Hangchow and Soochow, are given particular attention.

Commerce.—Detailed information regarding business organization and customs, varieties of *chuang* (庄) and *hong* (行), local currency systems, and trade tendencies have been obtained from reliable sources.

Mining.—The mineral products of various districts, organization and working conditions of mining companies,

statistics showing production and sales of mineral products, are points which have been treated with particular care.

Agriculture.—In investigating agricultural conditions in various districts, we aimed at securing accurate statistics and reliable data relating to the production and distribution of agricultural products, systems of land tenancy, selling, buying, and mortgaging of land, rural finance, labor conditions, and secondary occupations of the farming class.

Fishery and Marine Products.—Detailed information regarding the production and distribution of marine products and of fish culture has been gathered in the course of our investigation.

Method of Investigation.—In most cases members of our staff were sent to various districts to gather first-hand information, acting in co-operation with local organizations and individuals. Supplementary data has been obtained from official documents, handbooks of the province and its districts (省縣志書), and various other publications.

The above is a rough outline of the method being followed for an industrial investigation of the whole country. We expect to complete the first stage of this work —namely, investigation of the five provinces of Kiangsu, Chekiang, Hupeh, Hopei and Kwangtung—in two years. After four months of strenuous effort we are able to present the first result of our inquiry in the form of this handbook. Acknowledgements are here made to the Provincial Government, District Governments, Local Chambers of Commerce, and trade-unions of this province, whose sincere co-operation aided materially the work of investigation. To Mr. D. K. Liu and Dr. S. W. Kung we are indebted for valuable criticisms and suggestions. Thanks are also due to Messrs. Chiang Hsueh Kai, Lu Kuo Hsiang, Feng Ho Fa, Hsieh Che, Ma Chi Po, Hsiao Kuo Tso, Yao Fang Jen and Chao Chien—members of the staffs of the Bureau of Foreign Trade—who have done their work with great perseverance and energy in spite of numerous difficulties and obstacles, and to Messrs. Yuan Ching Ju, Yen Chi Kwang, Kuo Wei Peh, Hou Hou Chi, Li Hsien Chuan, Yang Tsu Chun, Chen Wang Tai, Wang Po Yen, Chen Ching Sheng, Pan Cheng Yin, Wu Hsien

Hsu, Hsu Chung Yen and Tao Chung Chi, who have prepared the reports for publication within a surprisingly short period of time. Lastly, we desire to express our appreciation of the services rendered by Mr. H. B. Hou, our chief investigator, and Mr. Chu Hsi Nung, our chief editor. It is mainly due to their untiring efforts and harmonious co-operation that we have been able to publish this book in its present form.

Shanghai, July 15, 1933.

Ping Yin Ho.
Editing-Director

PREFACE TO THE CHINESE EDITION

THE PLAN for investigating industrial conditions throughout the country was initiated by the Ministry of Industry and approved by the Executive Yuan in July, 1932. The undersigned, being appointed to take charge of the work of investigation and compilation, started on the task in August, 1932, under the direction of Mr. P. Y. Ho, who has greatly assisted us in overcoming many of the difficulties encountered.

At a time when the development of latent resources and encouragement of manufacturing enterprises is most urgently needed, a systematic investigation of existing industrial activities is a most essential undertaking. Regarding agricultural affairs there were some fairly accurate, if not complete, estimates or statistics, but authentic information relating to other industries was completely lacking.

It is generally recognised that before starting upon any undertaking it is necessary to have a thorough understanding of the scope of the proposed enterprise before any definite plan can be worked out and difficulties successfully surmounted as the work progresses. About twenty years ago a work known as "China's Provincial Records" (支那省別誌) was compiled by the Japanese, which has served as a guide for their political and economic activities in almost every part of China. Very little systematic work has been done along this line by Chinese investigators, and reliable data are woefully lacking. This lamentable state of affairs has increased the importance of our work in getting together the essential facts concerning industrial conditions which may serve as a basis for future development, and are available for general reference by all interested parties.

According to the plan passed by the Executive Yuan, this investigation of Chinese industrial conditions is to be made by provinces, the task is to be completed in four

periods. In the first the most important industrial and commercial provinces of Kiangsu, Chekiang, Hupeh, Hopei, and Kuangtung are to be investigated; in the second, the agricultural provinces of Anhui, Kiangsi, Hunan, Fukien. Szechuan and Shantung will receive attention; in the third the area covered will include Kuangsi, Yunnan, Kuichow, Honan, Kansu, Shansi, Shensi, Liaoning, Kirin, and Heilungkiang; while in the last period, attention will be given to Ninghsia, Jehol, Suiyuan, Chahar, Hsikang, Chinghai, Mongolia and Tibet.

Before investigation work was started a program governing the collection of material and information was carefully prepared, giving special attention to uniformity in methods of investigation, preparation of a detailed standard questionnaire, zoning of the areas to be covered, and division of work. In collecting data one question raised was whether existing material should be used to supplement new information, or *vice versa*, whether lines of business or of locality should be taken as the basis for investigation, and lastly, whether statistics collected should be for the last few years, the average of those years, or only for the previous year.

In order to maintain uniformity of investigation daily conferences of the research staff were called two weeks before starting work in order to study the methods to be adopted, including checking and compilation of data. Arrangements were made with *hsien* Governments, Bureaux of Reconstruction, Chambers of Commerce, and agricultural and forestry stations to give every facility to investigators. Every member of the staff was required to participate in the research work done at Wusih and Wuhsien. Only after intense training investigators sent to the various districts assigned to them, and such difficulties as were encountered were for the most part speedily overcome.

According to the original plan, manufacturing industries, commerce, mining, agriculture, fisheries, and stock-raising were among the subjects to be investigated. In dealing with manufacturing industries a careful study has been made of the number of factories, captial, operatives, raw materials, processes of manufacture, variety of

products, trade-marks, methods of marketing, and area of sales. In commerce attention has been given to the organization of concerns, trading methods, amount of business handled etc. In regard to mining, the organization of companies and their output are the principal subjects dealt with. In agriculture, the size of cultivated areas, nature of staple products, marketing conditions, land-renting systems, rural economics, and peasants' secondary occupations form the chief objects of study, while in regard to fishery and stock-raising prior importance is given to producing and selling conditions.

In order to carry out our plan the following different forms of investigation were followed:—

(1) Manufacturing industries (for the whole district).—Name of the industry, names of factories, location, date established, organization, capital, operatives, raw materials, marketing, and equipment.

(2) Manufacturing Industries (for individual factories).—In addition to the items enumerated above, two were added—processes of manufacture and methods of improvement.

(3) Manufacturing Industries (for the whole industry).—Historical sketch, raw materials, processes of manufacture, products, competition, taxes and duties, transportation, packing, trade methods and customs (to be filled up by either the Trade Association concerned or by the leading firm in the industry).

(4) Economic Conditions:—Area, population, climate, history of principal local enterprises, important towns, exports and imports, business customs, classes of business.

(5) Financial Business:—Banks, warehouses, pawnshops and insurance. Name of the concern, date established, nature, organization, capital, reserves, chief business, business done during the last three years, classification of customers, etc.

(6) Commercial Firms (similar to No. 5).

(7) Rural Economic Conditions:—Area of the whole district and of land under cultivation, details of land tax, relations between landowners and tenants, wages, co-operative societies, nature of soil, volume of rainfall, classification of farmers and tenants, value of land, and rural finance.

(8) Domestic Industries:—Name of the industry, location, raw materials, production, season, process of manufacture, use made of product, equipment, business methods, marketing, sales, taxes and duties, number of families engaged, estimated output.

(9) Agricultural Products:—Area under cultivation, yield per *mou*, yield of whole district, method and season of cultivation, marketing.

(10) Mining:—Name of mining companies, date of establishment, date of operation, capital, reserves, area, equipment, transportation, number of operatives, wages, sales, etc.

(11) Communications & Transportation:—Railways, highways, waterways, postal service, telephone and telegraph service, etc.

(12) Salt & Land Reclamation:—Name of the company, date established, nature of organization, capital, area, irrigation systems, fertilizing methods, production, etc.

As our present field of investigation is limited to industries, and these handbooks are for general reference by the layman rather than for technical experts, our investigation form, after consulting with experienced authorities, was made general rather than particular, including only those items relating to production and marketing.

For convenience in the distribution of research work the Province was divided into two main divisions, Kiangnan and Kiangpei, or districts south and north of the Yangtse River, the former being again sub-divided into eight sections and the latter into four, as follows:—

SOUTH OF YANGTSE

First Section—Shanghai.
Second Section—Paoshan, Kiating, Taitsang, Kunshan.
Third Section—Wuhsien, Changshu, Kiangyin, Ihsing.
Fourth Section—Wusih, Wuchin, Tanyang, Chinkiang, Kiangning (including Nanking).
Fifth Section—Icheng, Luho, Kiangpu, Chuyung.
Sixth Section—Lishui, Kaoshun, Liyang, Chintan.
Seventh Section—Chuansha, Nanhui, Fenghsien, Chinshan, Tsungming.
Eighth Section—Sunkiang, Tsingpu, Wukiang.

NORTH OF YANGTSE

First Section—Chitung, Haimen, Nantung, Jukao, Tsingkiang, Taihsing, Yangchung, Taihsien, Tungtai.
Second Section—Hsinghua, Yencheng, Founing, Lienshui, Kuanyun, Tunghai, Kangyu.
Third Sectiond—Kiangtu, Kaoyu, Paoying, Huaian, Huaiyin, Ssuyang, Shuyang.
Fourth Section—Suchien, Shuining, Tungshan, Tangshan, Fenghsien, Peihsien, Hsiaohsien.

It was also decided that investigation in various districts be finished in the shortest period possible, so that prevailing conditions of one industry in various districts at the same time could be obtained. For this reason information more than six month's old has not been used in this book.

Material was collected by districts in order that investigators could examine other lines of industry and economic conditions in the same district. In order to make this book as a work of reference for years to come, and not an annual, we set up the rule that only when it was impossible to set an average for the last few years, would figures be used for a few years together with a reasonable estimate of the average. In addition to investigators were required to give a full account of the history of each industry, production, processes of manufacture, transportation, distribution of sales, etc. so that readers of the Handbooks might have a general review of the industry at their disposal.

In order to make this series of Handbooks comprehensive, every line of industry in the Province, including agriculture, forestry, fishery, stock-raising, mining, manufacturing, commerce, rural economics, and communications are included. It is obviously impossible to make every one of these complete, and the only thing feasible is to set together all the material available. As accurate statistics regarding various industries, especially agriculture, are not to be had, in compiling this book, we have used records from various reliable sources for comparison in addition to our own figures. In regard to the more important industries we shall revise our work from time to time and publish the results in the periodicals of the Bureau. In order to make the contents of this book authoritative all the material collected was first revised by the second of the undersigned, then compiled and checked by the first, and scrutinised by expert authorities before being finally approved by the Editing-Director. We sincerely hope that with such careful preparation this series of Handbooks will prove a useful guide to their readers.

We are confident that the information contained in this volume is not more than six months old, and we have made revisions from time to time in order to keep the book up to date with changing conditions. We also believe that the systematic method of investigation followed by our staff makes the material in this record of a uniform standard.

It may be pointed out that as the object of our investigation is merely to encourage industry and develop trade, great emphasis has been given to production and marketing, matters having no direct bearing on these subjects being excluded. Since it is our aim to take a general and broad view, rather than make a technical study, of industrial conditions, we regret that a comprehensive treatment of some special subjects has not been possible. The principal source of information is the result of our own investigation, but material from well-informed sources has been also incorporated.

The investigators set to work on August 15, 1932, and completed their task by the end of November. When they began their inquiries, compilers started, at the same time

their search for all existing material available. On finishing investigation of the districts south of the Yangtse River, compilers began to study the forms sent in to them. In order to expedite the work investigators, when working in Kiangpei districts, sent back their forms from time to time, so that the compilers could work on them. It was a most difficult task for the compilers, because in many instances the old material conflicted with the new, and moreover, the time allowed for Kiangsu Province was limited, and the work had to be finished within one month after investigations were concluded.

Many industrial and trade associations have rendered useful assistance in our labors. Numerous factories and workshops, convinced of the importance of our aims, were quite willing to co-operate with us and, to show our appreciation of their aid any confidential information given has not been disclosed or mentioned in any way. The indifferent attitude adopted by a few industrial concerns caused much difficulty and delay in our work, and owing to disputes about business-tax, the weak organization of some trade associations, and the late harvest of some agricultural products, figures relating to some enterprises may not be quite accurate.

That we have completed so complicated and important a task in so short a period is due to those to sharing the work who worked twelve hours a day, even on Sundays. We are also grateful to various departments of the Kiangsu Provincial Government, especially the Departments of Industry and Reconstruction, Hsien Government, Bureaux of Reconstruction, Agricultural and Forestry Experimental Stations, and others, who rendered such valuable help. We are also greatly indebted to Dr. D. K. Liu, who has not only guided us with numerous suggestions, but provided us with much valuable material. We are also anxious to make acknowledgement of the aid given by

Messrs. Miao Chung-hsiu (繆鍾秀), Wu Chueh-nung (吳覺農), Yu Hai-ching (俞海清), Wu Teh-ming (吳德銘), Chiang Ti-hsien (蔣迪先), Yeh Yuan-ting (葉元鼎), Sun Pen-chung (孫本忠), Chen Chung-i (陳宗一), Hu Chang Chih (胡昌熾), Hou Chao-hai (侯朝海), Wang Wen-tai (王文泰), Tao Yu-men (陶禹門), Wang Shih-chiang (王士強), Kung Shih-ngoh (孔士諤), Lin Tao-yang (林道揚), Ke Hsiao-tung (葛嘵東), Ku Hsing-i (顧馨一), Ke Chi-hsien (葛基賢), Tsai Wei-hsia (蔡蔚霞), Tang Chien-chung (湯建中), Wu Teh-lin (吳德麟), and Yang Shou-piao (楊壽標). Regarding our work on raw silk, tea, animal products, cotton, cotton yarn and piecegoods, fisheries and aquatic produce, lace, silk-weaving, printing and printing ink, forestry, etc. Above all, our greatest debt of gratitude is to our Editing-Director, Mr. P. Y. Ho, without whose encouragement and assistance this volume would never have been produced.

Chu Hsi-nung
Hou Hou-pei

Shanghai, March 1, 1933.

PREFACE TO THE ENGLISH EDITION

THE SERIES of China Industrial Handbooks are to be published both in Chinese and English. The English edition is not an exact or literal translation of the Chinese, although the latter is the original from which this volume has been compiled. It will be found on comparison that the manner of presenting material is sometimes different in the two editions, and some details which appear in the original have been omitted in the English version, simply because they are considered to be of little interest to foreign readers.

Readers of this volume may be reminded of several points. With a few exceptions, the industries established in this country are primarily domestic rather than manufacturing enterprises in the modern sense of that term. A "factory", for example, in the western sense may mean a concern where thousands of workers are employed, but the term is used in regard to Chinese industry in a much more limited sense. Many industries are followed by farmer families as a secondary occupation in their homes, but the aggregate production of these "factories" is of considerable magnitude. Thus, some information gathered by investigators may seem fragmentary or even trivial, and the prevailing conditions in such industries are most changeable. This was one of the many difficulties encountered in compiling information concerning industrial activities.

It will be found that when the names of foreign industrial and commercial firms are mentioned, they are mostly in connection with Shanghai. This volume, however, aims chiefly at showing conditions in regard to Chinese enterprises, and references to foreign firms have been for the most part omitted.

Owing to the fact that such an investigation, however imperfect it may be, is an undertaking for which there is no precedent, while the time and facilities allowed for the

compilation of both the Chinese and English editions were severely limited, this first of a series of Handbooks, covering Kiangsu Province, must necessarily prove far from being as satisfactory as was expected, but it is hoped improvements will be made in the ensuing volumes for other provinces and in the revised edition of this volume.

In spite of its obvious shortcomings, however, it is hoped this volume will serve as a useful book of reference to many who are interested in the economic development of this country, and its production is entirely due to the untiring efforts of Messrs. H. B. Hou and Chu Hsi-nung, who have had to overcome numerous difficulties before completing even this humble achievement.

In the compiling of the English edition, credit must be given to those who did the work of translation, viz., Messrs. T. H. Hwang, Kingwell H. Tsai, Tsou Yu-lih, Sih I-heng, Chu Kan-tao and Leonard Jee. Acknowledgement must be made to Mr. D. J. Evans, who revised many of the manuscripts and offered much valuable advice.

E. C. K.
L. K.

Shanghai, July 15, 1933.

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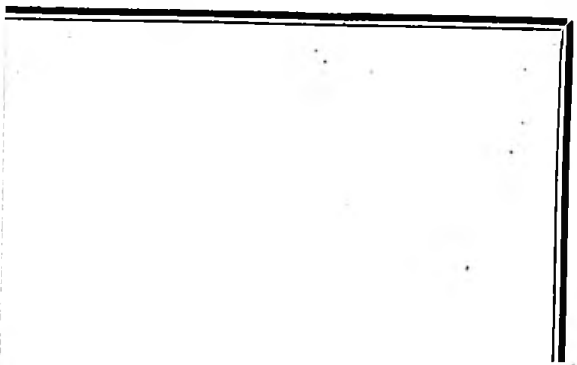

BOOK ONE

INTRODUCTION

CHAPTER I

HISTORY

KIANGSU, the most populous province of China, as well as her political and industrial center, was called Yangchow in the time of Emperor Yu (禹), 2200 B.C. In the Book of Rites, it is recorded that this Province was called Yangchow (揚州) and Hsuchow (徐州) during the Chow Dynasty. A little later, at the time of Confucius, it was divided among the states of Wu (吳), Yueh (越), Chu (楚), Lu (魯), and Sung (宋). In the Han Dynasty, it was again called Yangchow and Hsuchow, the former belonging to the Kingdom of Wu, while the latter belonged to the Kingdom of Wei (魏) during the time of the Three Kingdoms. The Capital of Eastern Chin (東晉) Dynasty was situated at Chienkang (建康, Nanking). During the Six Dynasties, it retained its old name, but two additional sections, called Nanhsuchow (南徐州) and Tunghsuchow (東徐州), were created out of the old territory of Hsuchow. In the later part of Sui Dynasty it was divided into the districts of Tanyang (丹陽), Kiangtu (江都), Piling (毘陵), Wuchun (吳郡) Pengcheng (彭城), Tunghai (東海) and Hsiapei (下邳), and this system was followed until the beginning of the Tang Dynasty (733 A.D.), when these districts were combined into three provinces, Kiangnan Tung Tao (江南東道) Kiangnan Hsi Tao (江南西道) and Huainan Tao (淮南道). After the Tang Dynasty, these three provinces were occupied by Yang Lung Yen (楊隆演) and later by Li Shen (李昇), and united to form the Kingdom of Wu. In 975 A.D., when the first emperor of Sung conquered the state of Wu, it was made into two provinces, Kiangnan and Huainan. Under Kublai Khan and his decendents, these two Sung provinces were combined to form the province of Chiching (集慶). The capital of the Mings was originally established at Nanking, and the province changed its name from Chiching to Yingtien (應天) and then to Nanking, con-

taining six prefects and one *chow* (州). The name Kiangsu was first used in the Tsing Dynasty and the province contained eight *fu* (府) or prefects, three *chow* (州) and one *ting* (廳). Under the Republic, the Province still retains its old name and contains the following 61 districts (*hsien*):

Nanhui	南匯	Taihsing	泰興
Fenghsien	奉賢	Kiangtu (Yangchow) 江都(揚州)	
Sungkiang	松江	Kaoyu	高郵
Chuansha	川沙	Paoying	寶應
Shanghai	上海	Huaian	淮安
Tsingpu	青浦	Huaiyin (Tsingkiangpu) 淮陰(清江浦)	
Chinshan	金山	Ssuyang	泗陽
Wukiang	吳江	Suchien	宿遷
Wuhsien (Soochow) 吳縣(蘇州)		Suining	睢甯
Kunshan	崑山	Tungshan (Hsuchow) 銅山(徐州)	
Kiating	嘉定	Tangshan	碭山
Paoshan	寶山	Hsiaohsien	蕭縣
Tsungming	崇明	Fenghsien	豐縣
Taitsang	太倉	Peihsien	邳縣
Changshu	常熟	Shuyang	沭陽
Wusih	無錫	Peihsien	沛縣
Kiangyin	江陰	Tunghai (Haichow) 東海(海州)	
Wuchin (Changchow) 武進(常州)		Kuanyun (Panpu) 灌雲(板浦)	
Ihsing	宜興	Kangyu	贛榆
Liyang	溧陽	Lienshui	漣水
Kaoshun	高淳	Founing	阜甯
Lishui	溧水	Yencheng	鹽城
Kiangning (Nanking) 江甯(南京)		Hsinghua	興化
Chuyung	句容	Tungtai	東台
Kiangpu	江浦	Taihsien	泰縣
Luho	六合	Jukao	如皋
Icheng	儀徵	Tsingkiang	靖江
Chinkiang	鎮江	Nantung (Tungchow) 南通(通州)	
Chintan	金壇	Haimen	海門
Tanyang	丹陽	Chitung	啓東
Yangchung	揚中		

CHAPTER II

AREA AND POPULATION

AREA

NO EXACT figures of the area of Kiangsu Province are obtainable, as many of the *hsien* have not been surveyed. According to the Government estimate of 1902, the area of the Province is 38,610 square miles, or 100,048 square kilometers, while S. W. Williams' estimate in his "The Middle Kingdom" was 44,500 square miles or 115,311 square kilometers. In addition to these estimates, there are many others given by different authorities. All of them, however, differ from each other considerably. According to G. F. Browne, the area is 36,900 square miles or 95,617 square kilometers, to Archbald R. Colquhoun, 40,000 square miles or 103,650 square kilometers, and to A. H. Keane, 38,600 square miles or 100,023 square kilometers. The Provincial Government in a book published in 1930 gave as 366,209 square *li* which is equal to 121,499 square kilometers. This figure, though generally considered as near to truth, is still not very accurate inasmuch as the reports submitted by various districts were not all based upon the results of actual surveys. For the same reason, the figure obtained through our own investigations, which puts the area of the Province at 386,497 square *li*, or 123,230 square kilometers, may not be quite accurate. The most approximate figure is probably given by the Military Surveying Bureau, according to which, the total area of the 61 *hsien* and 2 municipalities is 163,023,000 *shih mou* (市畝) or 108,682.05 square kilometers.

Of the total area of the Province, 2,086,964 *shih mou* (1,091.30 square kilometers) or 1.28 per cent of the total are cities and towns, 160,936,306 *shih mou* (107,290.92 square kilometers) or 98.72 per cent, are rural lands. Among the *hsien*, Kiangning (including the Municipality of Nanking) has the largest urban area covering 884.81

square kilometers, and Shanghai ranks next with an urban area of 379.75 square kilometers. As to rural area, Tungtai has the largest, covering 5,733.66 square kilometers.

Kiangsu being a level province, its level plain amounts to over 86 per cent of the total area of 140,362,875 *shih mou*, or 935,799,288 ares. Hilly land only form 6.7 per cent of the total area, being 10,923,357 *shih mou*, or 72,826,141 ares, while water area is 11,736,750 *shih mou*, or 78,248,912 ares, forming 7.2 per cent of the total. The following table gives the details:

Hsien	AREA IN ARES				AREA IN KILOMETERS				
	Plains	Hillyland	Water	Total	Urban Area		Rural Area		Total
					Area	Percent	Area	Percent	
Founing	57,595,380	——	75,004	57,670,383	114.76	1.99	5,651.99	98.01	5,766.75
Tungtai	57,442,872	——	——	57,442,872	10.34	0.18	5,733.66	99.82	5,744.00
Yencheng ...	47,270,863	——	1,180,059	48,449,922	61.04	1.26	4,783.71	98.74	4,844.75
Tungshan ...	27,883,894	6,047,802	2,755,138	36,693,501	4.40	0.12	3,664.77	99.88	3,669.17
Jukao	35,056,753	——	440,022	35,496,775	3.55	0.10	3,545.95	99.90	3,549.50
Kuanyun ...	26,198,810	1,405,070	205,010	27,808,890	8.90	0.32	2,771.85	99.68	2,780.75
Lienshui	27,311,366	——	60,003	27,371,369	44.88	1.64	2,692.12	98.36	2,737.00
Tunghai	17,355,868	9,505,475	——	26,861,343	89.44	3.33	2,596.56	96.67	2,686.00
Kaoyu	21,166,058	——	4,820,241	25,986,299	3.12	0.22	2,595.38	99.88	2,598.50
Wuhsien	14,468,223	2,202,610	8,617,931	25,288,764	10.62	0.42	2,518.13	99.58	2,528.75
Wuchin	16,648,332	512,526	7,432,872	24,593,730	2.70	0.11	2,456.55	99.89	2,459.25
Nantung ...	22,038,602	——	2,530,127	24,568,728	1.47	0.06	2,455.28	99.94	2,456.75
Ssuyang	20,891,045	——	2,907,645	23,798,690	1.22	0.02	2,378.53	99.98	2,379.75
Peihsien	22,621,131	1,127,556	40,002	23,788,689	0.49	0.02	2,378.26	99.98	2,378.75

Suchien	22,296,115	1,397,570	——	23,687,018	19.65	0.83	2,348.93	99.17	2,368.58
Hsiaohsien ..	19,165,958	4,390,220	110,006	23,666,183	0.71	0.03	2,365.79	99.97	2,366.50
Shuyang	23,051,153	427,521	——	23,478,674	2.82	0.12	2,344.93	99.88	2,347.75
Huaian	16,209,144	——	227,511	23,103,655	4.39	0.19	2,305.86	99.81	2,310.25
Kiangning ...	10,582,362	11,220,561	920,046	22,723,636	884.81	38.94	1,387.44	61.06	2,272.25
Kiangtu	21,506,075	——	1,130,057	22,636,132	14.49	0.64	2,249.01	99.36	2,263.50
Huaiyin	19,038,452	42,502	3,102,655	22,183,609	14.86	0.67	2,203.39	99.33	2,218.25
Paoying	18,623,431	——	2,615,131	21,238,562	0.85	0.04	2,122.90	99.96	2,123.75
Taihsien	21,163,558	——	——	21,163,558	121.27	5.73	1,994.99	94.27	2,116.25
Hsinghua ...	20,011,001	——	515,026	20,523,526	48.64	2.37	2,003.86	97.63	2,052.50
Changshu ..	15,135,757	——	4,852,743	19,988,499	175.88	9.20	1,814.87	90.80	1,998.75
Ihsing	11,420,571	5,155,258	2,200,110	18,775,939	0.55	0.03	1,876.95	99.97	1,877.50
Suining	17,420,871	567,528	52,503	18,040,902	123.03	6.82	1,680.97	93.18	1,804.00
Kangyu	14,685,734	3,067,653	——	17,753,388	549.88	2.81	1,725.37	97.19	1,775.25
Luho	9,000,450	7,397,870	340,017	16,738,337	22.09	1.32	1,651.66	98.68	1,673.75
Liyang	11,193,060	3,857,693	67,503	15,118,256	2.57	0.27	1,509.18	99.83	1,511.75
Chuyung	9,820,491	4,792,740	137,507	14,750,738	2.51	0.17	1,472.49	99.83	1,475.00
Tsungming ..	8,035,402	——	6,365,318	14,400,720	59.60	0.17	1,380.40	99.83	1,440.00
Taihsing ...	13,923,196	——	——	13,923,196	3.34	0.24	1,388.91	99.76	1,392.25
Peihsien	13,725,686	——	102,505	13,828,191	1.38	0.10	1,381.37	99.90	1,382.75
Kiangyin ...	12,100,605	342,517	1,082,554	13,525,676	26.78	1.98	1,325.72	98.02	1,352.50
Wusih	11,093,055	607,530	1,392,570	13,093,155	6.68	0.51	1,302.57	99.49	1,309.25
Haiman	10,433,022	——	2,280,114	12,713,136	1.91	0.15	1,269.34	99.85	1,271.25
Tangshan ..	12,710,636	——	——	12,710,636	0.76	0.06	1,270.24	99.94	1,271.00

Fenghsien ..	12,385,819	—	—	12,385,619	100.99	0.08	1,237.51	99.92	1,238.50
Chitung	8,555,428	—	3,205,160	11,760,588	55.86	4.75	1,120.14	95.25	1,176.00
Wukiang ...	8,802,940	—	2,747,637	11,550,578	5.89	0.51	1,149.11	99.49	1,155.00
Chinkiang ...	8,730,437	922,546	7,412,871	10,465,523	5.02	0.48	1,041.48	99.52	1,046.50
Tanyang ...	10,225,511	92,505	77,504	10,395,520	2.60	0.25	1,036.90	99.75	1,039.50
Chintan	7,382,869	800,040	2,132,607	10,315,516	4.95	0.48	1,026.55	99.52	1,031.05
Nanhui	9,982,999	—	20,001	10,003,000	1.80	0.18	998.45	99.82	1,000.25
Lishui	8,489,591	1,170,059	—	9,852,993	0.20	0.02	985.05	99.98	985.25
Taitsang ...	6,370,319	—	2,555,128	8,925,446	27.40	3.07	865.10	96.93	892.50
Sungkiang .	8,637,932	—	50,003	8,687,934	16.59	1.91	852.16	98.09	868.75
Kiangpu	2,667,653	5,260,263	327,516	8,255,413	22.95	2.78	802.55	97.22	825.50
Paoshan	4,610,231	—	3,390,170	8,000,400	2.34	0.29	797.68	99.71	800.00
Kunshan	7,560,378	—	390,020	7,950,398	5.62	0.33	792.38	99.67	795.00
Kaoshun ...	6,465,323	207,510	1,102,555	7,775,389	16.95	2.18	760.55	97.82	777.50
Tsingkiang ..	6,217,811	—	1,150,058	7,367,868	49.58	6.73	687.17	93.27	736.75
Icheng	6,572,829	282,514	397,520	7,255,863	12.11	1.67	713.14	98.33	725.25
Tsingpu	6,420,321	22,511	547,527	6,990,350	58.02	8.30	640.98	91.70	699.00
Fenghsien ..	5,865,293	—	—	5,865,293	130.85	22.31	455.65	77.69	586.50
Shanghai ...	5,160,258	—	222,511	5,382,769	379.75	70.55	158.50	29.45	538.25
Kiating	4,610,231	—	—	4,610,231	6.41	1.42	454.59	98.58	461.00
Chinshan ..	3,773,689	—	—	3,772,689	3.92	1.04	373.33	98.96	377.25
Yangchung ..	2,351,116	—	855,861	2,877,644	0.94	0.33	286.81	99.67	287.75
Chuansha ..	1,042,552	—	—	1,042,552	0.68	0.65	103.57	99.35	104.25
Total ..	935,799,288	72,826,141	78,248,912	1,086,874,371	1,091.13	1.28	107,290.92	98.72	108,682.05

POPULATION

The total population of the Province is 35,807,771, with 19,035,163 males and 16,772,608 females. Shanghai Municipality (including Chinese and foreign residents in the first and second special districts) has the largest population of over three million people. There are other seven *hsien* which have population of over one million, 19 *hsien* with population 500,000, and 33 *hsien* over 100,000. As to density, Shanghai also ranks first with 827.02 persons to a square kilometer, Shanghai native city with 751.86, and Wusih with 686.89. Although Kiangsu is a province most advanced in industry, the major part of the population is composed of rural population, forming about 84 per cent as compared with 16 per cent of urban population. With the exceptions of Greater Shanghai and Kiangning, all *hsien* have larger rural population than urban. The following table, showing the population of each *hsien* in the Province, is compiled from the results of our own investigations which were conducted through the Bureaux of Public Safety of the various *hsien*. Though the period of investigation lasted no less than four months (August to November 1932), during which change might have taken place, the figures, however, are the results of careful computations:

	Male	Female	Total	Density (per km.)
Nanhui	239,814	242,293	482,107	482.00
Fenghsien	99,114	101,257	200,371	341.64
Sungkiang	204,400	185,319	389,719	448.60
Chuansha	67,333	62,939	130,272	249.61
Shanghai	57,414	57,336	117,750	751.86
Tsingpu	125,972	123,332	249,304	356.71
Chinshan	79,275	75,150	154,425	409.34
Wukiang	229,688	202,684	432,372	374.34
Wuhsien	483,591	423,999	907,590	358.91
Kunshan	120,453	114,934	235,387	296.08
Kiating	124,452	120,099	244,551	530.48
Paoshan	83,077	78,929	162,006	202.51
Tsungming ...	220,285	186,081	406,366	282.20
Taitsang	149,368	140,529	289,897	324.81
Changsu	444,748	414,490	859,238	429.89
Wusih	472,074	427,217	899,291	686.87
Kiangying	380,906	336,049	716,955	530.10

Wuchin	450,486	392,283	842,769	342.69
Ihsing	265,600	230,831	496,431	264.41
Liyang	185,117	136,824	321,941	212.96
Kaoshun	123,268	95,951	219,219	281.95
Lishui	96,714	73,482	170,196	172.74
Kiangning	264,453	225,769	490,222	215.39
Chuyung	131,183	113,587	244,770	165.95
Kiangpu	66,018	57,830	123,848	150.03
Luho	182,336	174,885	357,221	224.18
Icheng	110,156	99,273	209,429	288.77
Chingkiang ...	282,940	240,360	523,300	500.05
Chintan	131,892	111,948	243,840	236.39
Tanyang	243.752	216,250	460,002	442.52
Yangchung ...	81,005	73,511	154,516	536.98
Taishing	460,849	440,359	901,208	647.30
Kiangtu	595,800	563,634	1,159,434	512.23
Kaoyu	324,830	302,948	627,778	241.59
Paoying	218,883	209,909	428,792	221.90
Huaian	374,223	356,511	730,734	316.30
Huaiyin	218,807	207,958	426,765	192.59
Ssuyang	312,801	210,801	523,602	220.02
Suchien	348,503	322,438	670,941	283.27
Suining	283,222	264,626	547,848	303.69
Tungshan	517,493	469,043	986,536	268.87
Hsiaohsien	267,262	242,382	509,644	215.36
Tangshan	153,320	139,034	292,354	230.02
Fenghsien	162,053	142,427	304,480	205.85
Peihsien	184,786	161,807	346,593	250.65
Peihsien	305,584	279,320	584,904	245.89
Shuyang	284,538	266,222	550,760	234.59
Tunghai	203,314	169,425	372,739	138.77
Kuanyun	300,210	281,625	581,835	209.24
Kangyu	210,394	188,932	399,326	224.94
Lienshui	277,983	269,392	547,375	199.99
Founing	529,692	472,217	1,001,909	173.74
Yencheng	543,504	495,349	1,038,853	214.43
Hsinghua	293,575	266,612	560,187	282.93
Tungtai	625,980	567,585	1,193,565	207.79
Taihsien	549,047	504,114	1,053,161	497.65
Jukao	763,495	664,809	1,428,304	402.40
Tsingkiang ...	189,688	158,144	347,832	472.11
Nantung	725,152	533,309	1,358,461	551.95
Haimen	317,834	290,333	608,167	478.40
Chitung	176,007	159,583	385,590	285.37
Municipality of Nanking ...	387,104	245,574	632,678	511.24
Municipality of Shanghai ...	1,732,246	1,290,865	3,023,111	827.07
Total	19,035,163	16,772,608	35,807,771	294.73

Of the population of Kiangsu, males constitute 53.16 per cent. Divided according to age, 18.96 per cent or 6,789,153 persons are below 10 years of age, 36.68 per cent or 13,134,290 persons are between 11 and 30, 34.28 per cent or 12,274,904 persons, between 31 and 60, 10.08 per cent or 3,609,423 persons, above 61.

Occupation—Although this province leads all others in industrial development, the urban population of the province occupies only 15.7 per cent of the total. With the exception of Shanghai and Nanking, the population in country always exceeds that in the cities.

Only 47 per cent of the Kiangsu population are employed. The number of unemployed exceeds that of employed in 37 districts. The following table shows the percentage of the population engaged in various occupation:

	Male	Female	Child
Farmers	61.79	59.24	34.47
Industrial workers	8.66	12.76	7.97
Merchants	8.75	2.98	7.01
Miners	0.63	0.04	1.00
Fishermen	1.47	1.59	1.73
Coolie	5.63	6.88	5.39
Students	0.76	3.38	24.87
Teachers	0.47	0.86	—
Physicians	0.14	1.24	—
Lawyers	0.19	—	—
Government Employees	0.79	—	—
Military	1.35	0.68	—
Priests	0.83	0.63	—
Prostitutes	—	1.53	—
Unemployed	2.39	5.91	—
Unknown	6.15	7.40	17.56
Total	100.00	100.00	100.00

CHAPTER III

TOPOGRAPHY

THE PROVINCE of Kiangsu is situated at the South-eastern part of China, being bounded by the Yellow Sea on the east, by Chekiang Province on the south, by Anhui on the west and southwest, by Shantung on the north, and Honan on the southwest. It consists principally of alluvial plains formed by the sediments of the Huang Ho in the north and the Yangtse River in the south. According to some geologists, the coast-line of Kiangsu extends one mile eastward out to the sea every sixty years, as the result of the accumulation of debris brought down by the rivers emptying into the Sea. Five thousand years ago, the coast was on the present district of Kiangyin, about 250 *li* west of the present coast-line, and the island of Tsungming, situated at the mouth of Yangtse and having a population of 400,000, did not appear until the Tang Dynasty.

Situated at the mouth of the Yangtse River, this Province hold the key position leading to the upper River ports. It is traversed by several trunk railway lines, the Tientsin-Pukow Railway running northward, crossing the Lung-Hai Railway at Tungshan, an important city in Northern Kiangsu. The Nanking-Shanghai Railway links the capital with the greatest industrial center, Shanghai, while the Shanghai-Hangchow-Ningpo Railway ties Chekiang Province. Since the National Government made Nanking the Capital of the country, this city has become not only strategically important but a political center as well.

MOUNTAIN RANGES

There is no great mountain ranges in the Province, although the regions in the northern and southern parts are somewhat hilly. A branch of the Taishan ranges enters the Province from the North, rising in Fenghsien as the Huashan (華山), with a height of 170 feet. In

Tungshan, there are numerous hills, but none is higher than 700 feet. Some of them are the Yunglungshan (雲龍山) Taishan (泰山), Paomashan (跑馬山), Hsiangshan (象山), Chintengshan (金鐙山), Maanshan (馬鞍山), Tahuangshan (大黃山), Hsiaohuangshan (小黃山), etc. In Hsiaohsien, hills of over 2,500 feet are found, more important being the Lungshan (龍山), Fengshan (鳳山), Hushan (虎山), Taishan (岱山), Wutungshan (五洞山), Lingshan (靈山), Maoshan (帽山), Pangwangshan (滂汪山), Paitingshan (白頂山), Tienmenshan (天門山), and Huangsangyushan (黃桑峪山). In Peihsien, there are the Kehishan (葛嶧山), Aishan (艾山), and in Kangyu, the Tawushan (大吳山), about 1,800 feet high, and Chiakushan (夾谷山) about 1,400 feet and Hsushan (徐山), about 1,200.

In the southern part of the Province, the Nanling Range enters the Province to the west of the Taihu Lake (太湖), making the regions in Liyang, Kaoshun, Lishui Chintan, Chuyung, and Tanyang quite hilly. Toward the northeast of Nanking, the Chungshan (鍾山) of the Tamao Range is found. There are many elevations like the Langshan (狼山) in Nantung, Fushan (福山) in Changshu, Huangshan (黃山) in Kiangyin, Chiaoshan (焦山) in Chinkiang are not connected with each other but noted for strategic importance or scenic beauty.

RIVERS AND LAKES

There are a considerable number of streams and lakes in the Province, the most notable being the Yangtse River, the Grand Canal, the Taihu Lake. The Yangtse River runs southward from Wuchiangchen (烏江鎮) of Anhui into the Province, joining Chinhuaiho (秦淮河) and Chuho (滁河) when it takes an eastward course at a point near Nanking. It crosses the Grand Canal at a point a little further east. It then flows through Changshu, Kiangyin, Shanghai into the sea.

The Grand Canal flows into the Province from Shantung, and runs southward to Chekiang, being 800 *li* in length within the Province. It was the principal line of communication between the North and the South in former days, but since the construction of the Tientsin-Pukow railway, it has outgrown its usefulness. The frequent

floods caused by it has become a great menance to the people in the northern parts of the province. In addition to the Yangtse and Grand Canal, there are five other streams of considerable importance. Their sources, courses, and terminals are as follows:

Chinhuaiho (秦淮河).—This river starts from two sources, the east from the district of Chuyung, and the west from Lishui. It runs through Nanking and terminates at the Yangtse.

Chukiang (滁江).—This stream starts from Hofei (合肥) in Anhui, running through Chuanchiao (全椒), Hohsien (和縣), and Chuhsien (滁縣) in Anhui, and enters the Yangtse at Luho, Kiangsu.

Loukiang (婁江).—It is an outlet of Taihu lake, flowing through Soochow, Kunshan, Taitsang and emptying into the Yangtse at Liuhokou (劉河口).

Woosunkiang (吳淞江).—This is also an outlet of Taihu lake, running eastward and goes into Whangpoo, passing through the district of Shanghai.

Whangpookiang (黃浦江).—This stream starts from the district of Chinshan running eastward and then northeastward through Shanghai, flowing into the sea together with Woosungkiang.

The Taihu is the largest lake in the Province, being 120 *li* from north to south and 90 *li* from east to west. It is fed by the streams from Tienmu (天目) and Maoshan (茅山) Ranges, while its principal outlets are Loukiang, Woosungkiang and Whangpookiang. There are many islands in the lake and the lake is rich in such products as fish, caltrop, lotus root, etc. The fields on the bank of Taihu are very fertile and particularly suitable for mulberry trees, hence sericulture is a very popular occupation among the people around the lake. But, owing to insufficient outlets, the lake has been the cause of floods in recent years.

CHAPTER VI

SOIL AND CLIMATE

In the south-eastern part of the Province, consisting of a great plain and being next to the sea, the climate is quite mild, as it is regulated by breeze from the sea, while the climate in the north-western part is decidedly continental in character, being extremely cold in winter and hot in summer. In winter time the wind is mostly northwestly, whereas in summer, it is south-eastly.

The temperature of the Province during the year is as follows:

Spring		Summer	
Highest	Lowest	Highest	Lowest
65 F	37 F	96 F	67 F
Average		Average	
47 F		82 F	
Autumn		**Winter**	
Highest	Lowest	Highest	Lowest
79 F	49 F.	50 F	22 F
Average		Average	
64 F		36 F	

These figures, however, are the averages for the whole Province, there is considerable variation in different localities.

The average amount of rainfall in the province is about 209 mm in spring, 200 mm in summer, 142 mm in autumn, and 97 mm in winter.

Generally speaking, the soil south of the Yangtse is more clayey than that north of the river. The following table shows the percentage of clayey and sandy soil in each district:

	Clayey Soil	Sandy Soil
Nanhui	95	5
Fenghsien	99	1
Sungkiang	85	15
Chuansha	80	20
Shanghai	70	30
Tsingpu	99.9	0.1
Chinshan	—	—
Wukiang	100	—
Wuhsien (Soochow)	100	—

Kunshan	100	—
Kiating	95	5
Paoshan	82	18
Tsungming	70	30
Taitsang	30	70
Changshu	—	—
Wusih	80	20
Kiangyin	—	—
Wuchin (Changchow)	70	30
Ihsing	81	19
Liyang	70	30
Kaoshun	91	9
Lishui	80	20
Kiangning (Nanking)	—	—
Chuyung	80	20
Kiangpu	40	60
Luho	65	35
Icheng	85	15
Chinkiang	80	20
Chintan	—	—
Tanyang	—	—
Yangchung	90	10
Taihsing	20	80
Kiangtu (Yangchow)	80	20
Kaoyu	100	—
Paoying	90	10
Huaian	90	10
Huaiyin (Tsingkiangpu)	65	35
Ssuyang	70	30
Suchien	50	50
Suining	42	58
Tungshan (Hsuchow)	28	72
Tangshan	61	39
Hsiaohsien	40	60
Fenghsien	50	50
Peihsien	65	35
Shuyang	95	5
Tunghai (Haichow)	86.5	13.5
Kuanyun (Panpu)	95	5
Kangyu	70	30
Lienshui	60	40
Founing	80	20
Yencheng	98.5	1.5
Hsinghua	90	10
Tungtai	70	30
Taihsien	85	15
Jukao	65	35
Tsingkiang	80	20
Nantung (Tungchow)	90	10
Haimen	70	30
Chitung	40	60

BOOK TWO

ECONOMIC CONDITIONS

CHAPTER I

AGRICULTURAL CONDITIONS

AREA OF CULTIVATED LAND

THE TOTAL area of cultivated land in the Province estimated on the basis of the provincial revenue from land tax in 1931, was approximately 80,009,725 *mou*. Tungshan possesses the largest area, covering 3,141,799.86 *mou*, while Icheng has only 297,622 *mou*, which is a smaller number than that registered in any other city in the Province. This estimate is, however, by no means very accurate in view of the fact that in different localities, the size of *mou* varies in an extremely wide range. Thus, though the cultivated land in Huaian and Paoying is all commonly known as *ching tien* (京田), the system of measure, nevertheless, differs greatly. While one *mou* of *ching tien* in the former city measures 4.2244 *mou* of *shi tien* (時田 6,000 square feet), that in the latter, as big as 11.75 *mou*. Again, in the district of Wusih, as a result of an investigation conducted by Academia Sinica covering 22 villages, it was found that there were no less than 173 variations in the measurement of land.

Analysis into the quality of land is almost impossible. Never before was any attempt made to classify land on the basis of sound scientific principles. The first difficulty that investigators have to encounter in their task of grading land is that there are no standard names given to different types of land. In Wuchin, for instance, land is classified into *ping* (平, plain), *sha* (沙, sandy), *kao* (高, high), *chi* (極, extreme) and *chiang* (埂, waterside), while only three classes *ping*, *sha* and *lu* (蘆, marshy) are distinguished in Tsingkiang. More peculiar names are used in other districts to designate the many grades of land.

Whereas the districts south of the Yangtse abound in low land, the fields north of that river are mostly on high plains. The following table shows the particulars:

	Total Area (*mou*)	Low Land. (*mou*)	High Land. (*mou*)	Hillyland. (*mou*)	Fields Around Lakes. (*mou*)	Former Salt Land. (*mou*)
Nanhui	1,222,118	1,222,118	—	—	—	—
Fenghsien	700,000	200,000	500,000	—	—	—
Sungkiang	972,438	—	—	—	—	—
Chuansha	190,000	40,000	150,000	—	—	—
Shanghai	247,375	51,938	195,436	—	—	—
Tsingpu	722,781	722,781	—	—	—	—
Chinshan	362,089	—	362,089	—	—	—
Wukiang	1,274,380	1,258,991	—	—	15,389	—
Wuhsien	1,814,628	1,487,383	61,861	145,539	119,845	—
Kunshan	1,069,675	1,069,675	—	—	—	—
Kiating	646,549	646,549	—	—	—	—
Paoshan	341,200	312,000	29,200	—	—	—
Tsungming	800,000	500,000	300,000	—	—	—
Taitsang	833,422	250,027	583,395	—	—	—
Changshu	1,735,600	1,093,800	627,600	—	14,200	—
Wusih	1,259,501	1,243,389	—	6,747	9,365	—
Kiangyin	988,292	952,976	31,616	3,690	—	—
Wuchin	1,728,671	1,188,494	135,002	29,488	375,687	—
Ihsing	1,267,873	1,149,151	17,868	42,722	58,132	—

Liyang	1,220,000	400,000	400,000	330,000	90,000	—
Kaoshun	810,004	237,592	150,355	84,125	337,932	—
Lishui	399,508	106,881	249,389	43,310	—	—
Kiangning	1,200,000	1,100,000	—	—	100,000	—
Chuyung	729,361	124,240	479,066	126,055	—	—
Kiangpu	422,400	360,000	62,400	—	—	—
Luho	853,543	677,764	175,779	—	—	—
Icheng	297,522	281,511	16,011	—	—	—
Chinkiang	721,644	98,570	623,074	—	—	—
Chintan	812,275	—	—	—	—	—
Tanyang	1,299,584	43,828	542,528	803,228	—	—
Yangchung	369,126	369,126	—	—	—	—
Taihsing	1,509,113	—	—	—	—	—
Kiangtu	2,411,727	2,018,292	394,435	—	—	—
Kaoyü	2,178,956	1,425,315	762,093	—	—	—
Paoying	2,591,577	—	—	—	—	—
Huaian	2,823,837	929,368	1,829,080	—	—	—
Huaiyin	1,165,710	—	988,269	—	177,441	—
Ssuyang	1,456,710	—	1,276,666	—	180,044	—
Suchien	644,905	—	644,905	—	—	—
Suining	2,891,700	—	2,891,700	—	—	—
Tungshan	3,141,800	—	3,020,025	18,025	103,749	—

Hsiaohsien	2,337,848	—	2,264,348	73,500	—	—
Tangshan	817,200	—	817,200	—	—	—
Fenghsien	1,568,269	—	1,568,269	—	—	—
Peihsien	995,878	229,474	766,313	14,097	—	—
Peihsien	1,490,650	—	1,395,553	—	—	—
Shuyang	1,398,243	—	1,398,243	—	—	—
Tunghai	417,291	—	—	—	—	—
Kangyu	2,529,641	232,456	2,297,186	—	—	—
Kuanyun	680,273	—	680,273	—	—	—
Lienshui	2,802,462	—	2,802,462	—	—	—
Founing	4,567,937	1,370,381	3,197,556	—	13,436	1,850,000
Yencheng	2,059,879	1,691,520	368,359	—	—	—
Hsinghua	1,979,596	1,583,677	395,919	—	—	—
Tungtai	355,202	312,700	42,500	—	—	—
Taihsien	584,033	—	—	—	—	—
Jukao	3,008,349	5,750	3,002,599	—	—	—
Tsingkiang	585,771	58,867	526,904	—	—	1,500,000
Nantung	1,237,567	—	1,237,567	—	—	—
Haimen	1,386,054	41,580	1,344,474	—	—	—
Chitung	970,000	110,000	960,000	—	—	—
Total	80,009,725	27,088,163	42,438,316	1,720,526	1,595,221	3,350,000

Slightly different figures are supplied by the Statistical Monthly. The discrepany is mainly due to lack of standard system of measure. According to that book, the cultivated area in the 61 *hsien* districts is as follows:

	Total Area (*mou*).	Low Land. (*mou*)	High Land (*mou*)	Hillside. (*mou*)
Nanhui	1,200,000	372,000	828,000	——
Fenghsien ..	486,090	97,218	388,872	——
Sungkiang ..	880,000	800,000	80,000	——
Chuansha ...	211,900	63,570	143,330	——
Shanghai ...	676,800	142,128	534,672	——
Tsingpu	516,090	515,961	129	——
Chinshan ...	372,647	298,117	74,530	——
Wukiang	911,652	738,438	173,214	——
Wuhsien	1,839,000	1,688,960	37,120	129,920
Kunshan ...	1,309,733	1,243,958	65,466	309
Kiating	723,200	231,424	491,776	——
Paoshan	612,700	189,937	422,763	——
Tsungming ..	1,150,070	575,035	575,035	——
Taitsang	789,100	236,730	552,370	——
Changshu ...	1,733,400	970,704	723,028	34,668
Wusih	1,521,600	1,143,450	228,690	153,460
Kiangyin ...	1,242,882	984,592	229,263	29,027
Wuchin	1,720,472	1,290,351	292,480	137,638
Ihsing	1,160,000	1,032,400	116,000	11,600
Liyang	1,391,500	1,224,520	——	166,980
Kaoshun	481,490	447,786	31,778	1,926
Lishui	526,400	431,638	63,168	31,584
Kiangning ..	1,430,000	1,172,600	157,300	100,100
Chuyung ...	371,437	615,121	81,422	34,894
Kiangpu	303,090	190,947	63,649	48,494
Luho	926,600	648,620	240,916	37,064
Icheng	821,207	558,421	262,786	——
Chinkiang ..	753,734	550,226	188,433	15,075
Chintan	812,165	722,827	64,973	24,365
Tanyang	1,134,000	793,800	283,500	56,700
Yangchung ..	230,960	209,664	23,296	——
Taihsing	1,460,000	394,200	1,065,800	——
Kiangtu	2,138,584	1,366,348	514,817	257,419
Kaoyü	2,144,809	1,501,360	643,440	——
Paoying	1,770,589	1,417,850	352,739	——
Huaian	2,823,386	705,845	2,117,535	——
Huaiyin	1,450,000	——	1,450,000	——
Ssuyang	2,475,000	49,500	2,425,500	——
Suchien	860,217	81,602	851,615	——
Suining	1,184,550	——	1,115,717	68,833
Tungshan ...	3,918,000	318,000	1,800,000	1,800,000

Hsiaohsien ..	2,257,600	22,576	806,080	248,944
Tangshan ...	1,712,380	——	1,712,280	——
Fenghsien ..	1,615,199	——	1,615,179	——
Peihsien	1,216,000	——	1,216,000	——
Peihsien	1,490,650	——	1,395,553	14,097
Shuyang	3,375,000	270,000	3,105,000	——
Tunghai	2,100,000	81,000	2,016,000	——
Kuanyun ...	2,781,909	55,639	2,720,707	5,563
Kangyu	2,109,000	168,720	1,919,190	21,090
Lienshui	2,802,826	——	2,802,826	——
Founing	2,330,207	699,062	1,631,145	——
Yencheng ...	2,058,600	1,832,154	226,446	——
Hsinghua ..	1,927,086	1,252,606	674,480	——
Tungtai	2,100,000	672,000	1,428,000	——
Taihsien	2,085,060	1,356,340	698,720	——
Jukao	3,688,500	1,475,400	2,213,100	——
Tsingkiang ..	934,798	476,747	458,051	——
Nantung	3,700,000	925,000	2,775,000	——
Haimen	1,607,820	257,251	1,350,569	——
Chitung	1,042,000	83,200	956,800	——
Total ...	91,399,680	38,643,553	51,483,248	3,429,750

DISTRIBUTION OF AGRICULTURAL LAND

The following shows the distribution of agricultural land among the rural families in each of the 61 *hsien* districts in the Province:

	Total Area. (*mou*)	No. of Rural Families.	Average for Each Family. (*mou*)
Nanhui	1,222,118.00	71,795	17.022
Fenghsien	700,000.00	30,000	23.333
Sunkiang	972,438.00	60,285	16.130
Chuansha	190,000.00	14,000	13.571
Shanghai	247,375.44	17,940	13.789
Tsingpu	722,781.00	40,600	17.802
Chinshan	362,089.00	24,379	14.852
Wukiang	1,274,389.00	66,269	19.230
Wuhsien	1,814,628.06	126,887	14.301
Kunshan	1,069,675.00	23,289	45.930
Kiating	646,549.00	38,500	16.793
Paoshan	341,200.00	31,004	11.005
Tsungming	800,000.00	110,705	7.226
Taitsang	833,422.00	42,943	19.407
Changshu	1,735,600.00	153,779	11.286

Wusih	1,259,501.00	160,206	7.861
Kiangyin	988,292.30	286,518	3.449
Wuchin	1,728,671.00	193,090	8,952
Ihsing	1,267,873.00	89,257	14.204
Liyang	1,220,000.00	45,595	26.757
Kaoshun	810,004.00	21,291	38.044
Lishui	399,508.00	37,000	10.797
Kiangning	1,200,000.00	81,600	14.705
Chuyung	729,361.00	24,401	29.890
Kiangpu	422,400.00	90,000	4.693
Luho	853,543.00	42,510	20.078
Icheng	297,522.00	29,965	9.928
Chinkiang	721,644.00	86,000	8.391
Chintan	812,275.18	38,876	20.894
Tanyang	1,299,583.59	101,685	12.780
Yangchung	369,126.00	28,910	12.768
Taihsing	1,509,112.90	700,000	2.155
Kiangtu	2,411,727.00	157,759	15.287
Kaoyü	2,187,956.00	334,114	6.548
Paoying	2,591,576.80	73,012	35.495
Huaian	2,823,837.00	126,000	22.411
Huaiyin	1,165,709.90	72,000	16.190
Ssuyang	1,456,710.00	79,443	18.336
Suchien	644,905.23	93,483	6.898
Suining	2,891.700.00	97,380	29.695
Tungshan	3,141,799.86	142,106	22.108
Hsiaohsien	2,337,847.52	82,750	28.251
Tangshan	817,200.00	58,817	13.893
Fenghsien	1,568,268.92	60,000	26.137
Peihsien	995,878.14	51,200	19.450
Peihsien	1,490,650.00	159,872	9.324
Shuyang	1,398,243.00	78,174	17.886
Tunghai	417,291.41	47,850	8.720
Kuanyun	2,629,641.24	96,257	27.318
Kanyü	680,272.51	70,576	9.638
Lienshui	2,802,641.66	85,342	32.838
Founing	4,567,937.00	15,390	296.812
Yencheng	2,059,879.00	192,000	10.728
Hsinghua	1,979,595.90	120,000	16.496
Tungtai	355,201.63	159,800	2.222
Taihsien	584,032.85	130,970	4.450
Jukao	3,008,349.16	189,750	15.854
Tsingkiang	585,771.08	69,037	8.484
Nantung	1,237,567.28	1,086,400	1.138
Haimen	1,386,054.00	645,502	2.147
Chitung	970,000.00	54,732	17.422
Total	80,008,742.14	7,538,995	10.612

UNCULTIVATED LAND

Owing to lack of reliable statistical data, the ascertainment of the exact area of uncultivated land in various districts is impossible. The table below contains the informations so far available:

	Investigations by the Ministry of Industry, 1932.	According to the Statistical Monthly, 1930.	Reports by the Kiangsu Provincial Department of Agriculture and Mining, 1928.
Nanhui	——	——	80,000
Fenghsien ...	2,000	——	——
Sunkiang	——	28,000	666
Chuansha	——	——	28
Shanghai	——	——	5,568
Tsingpu	7,835	6,624	4,267
Chinshan	——	2,920	1,750
Wukiang	90,037	69,328	63,861
Wuhsien	——	——	210,625
Kunshan	66,517	12,000	155,202
Kiating	900	——	171
Paoshan	6,800	——	——
Tsungming ...	——	——	1,192,178
Taitsang	13,788	390,000	14,381
Changshu	1,300	——	139,528
Wusih	——	121,000	4,838
Kiangyin	29,027	20,084	29,027
Wuchin	——	——	25,344
Ihsing	148,200	85,000	170,999
Liyang	290,000	181,500	245,363
Kaoshun	423,356	——	91,579
Lishui	——	——	292,061
Kiangning ...	400,000	220,000	580
Chuyung	77,939	103,547	724,385
Kiangpu	57,600	27,500	134,372
Luho	197,737	169,500	192,327
Icheng	3,501	15,228	——
Chinkiang	——	1,248,000	211,232
Chintan	——	215,339	220,245
Tanyang	——	20,000	——
Yangchung ..	——	——	——
Taihsing	——	——	15
Kiangtu	316,668	7,260	——
Kaoyu	1,548	——	——

Paoying	——	29,254	——
Huaian	65,389	16,650	——
Huaiyin	4,028	2,000	——
Ssuyang	——	10,050	——
Suchien	——	——	——
Suining	981,000	5,859	——
Tungshan	7,820	300,000	——
Hsiaohsien ..	19,400	3,750	——
Tangshan	——	——	10,700
Fenghsien. ..	——	400,893	——
Peihsien	405,998	38,400	——
Peihsien	——	——	——
Shuyang	——	——	——
Tunghai	——	——	5,104
Kuanyun	100,000	242,000	123,600
Kangyu	——	19,360	3,483
Lienshui	——	——	2,056
Founing	——	6,445,592	308,122
Yencheng	——	872,590	17,177
Hsinghua	——	63,000	59,146
Tungtai	——	400,000	2,703
Jukao	——	20,500	16,500
Tsingkiang ...	——	9,506	6,215
Nantung	——	——	228,746
Haimen	3,000	3,480	466,314
Chitung	——	——	——
Total	3,721,389	11,825,705	——

LAND PRICES

Though land prices vary greatly with the changing crop and economic conditions, low land, on an average, fetches about from $32 to $88 per *mou*, while high land, from $32 to $78, the land on hills being worth from $10 to $32. Details are as follows (prices per *mou*):

	Low Land			High Land			Hillside.		
	High Grade.	Medium Grade.	Low Grade.	High Grade.	Medium Grade.	Low Grade.	High Grade.	Medium Grade.	Low Grade.
Nanhui	$120	$100	$80	$—	$—	$—	$—	$—	$—
Fenghsien	80	70	60	70	69	50	—	—	—
Sunkiang	130	110	90	90	60	30	30	20	10
Chuansha	180	140	110	180	140	110	—	—	—
Shanghai	160	95	65	170	105	70	—	—	—

Tsingpu	160	110	70	100	80	40	—	—	—
Chinshan	—	—	—	—	—	—	—	—	—
Wukiang	110	80	50	—	—	—	—	—	—
Wuhsien	120	80	50	400	200	75	70	25	10
Kunshan	90	60	30	60	30	20	—	—	—
Kiating	100	80	60	70	55	40	—	—	—
Paoshan	150	80	40	250	120	70	—	—	—
Tsungming	50	40	30	60	50	40	—	—	—
Taitsang	80	50	20	80	50	20	—	—	—
Changshu	160	140	120	160	120	80	—	—	—
Wusih	110	100	80	—	—	—	—	—	—
Kiangyin	150	80	60	80	40	30	60	20	10
Wuchin	120	80	50	90	60	40	50	30	20
Ihsing	120	90	60	70	50	30	30	20	10
Liyang	70	45	15	60	45	15	15	10	5
Kaoshun	80	40	20	80	40	20	80	20	2
Lishui	100	66	30	100	66	30	20	15	10
Kiangning	—	—	—	—	—	—	—	—	—
Chuyung	90	60	30	20	18	8	3	—	—
Kiangpu	60	50	40	40	30	20	30	20	10
Luho	60	40	30	60	35	25	30	20	10
Icheng	120	50	10	50	30	10	—	—	—
Chinkiang	100	90	80	95	80	70	60	55	50
Chintan	90	60	35	—	—	—	—	—	—
Tangyang	100	65	30	100	65	30	50	—	—
Yangchung	70	50	30	90	70	50	—	—	—
Taihsien	—	—	—	100	65	45	—	—	—
Kiangtu	90	70	50	70	50	30	—	—	—
Kaoyu	60	50	40	65	55	45	—	—	—
Paoying	40	25	10	60	40	15	20	10	5
Huaian	50	30	20	40	20	10	—	—	—
Huaiyin	—	—	—	45	23	2	—	—	—
Ssuyang	—	—	—	34	23	10	—	—	—
Suchien	—	—	—	50	40	30	—	—	—
Suining	—	—	—	20	10	5	—	—	—
Tungshan	—	—	—	45	25	15	25	20	8
Hsiaohsien	—	—	—	40	30	15	15	10	5
Tangshan	—	—	—	32	28	24	—	—	—
Fenghsien	—	—	—	—	20	15	—	—	—
Peihsien	35	25	15	35	25	15	—	—	—
Peihsien	25	10	4	50	28	10	12	8	4
Shuyang	—	—	—	55	34	11	10	8	6
Tunghai	8	6	2	18	11	4	5	3	1
Kuanyun	30	25	18	25	20	15	—	—	—

Kangyu	40	25	20	50	40	35	4	2	0.60
Lienshui	—	—	—	40	24	10	—	—	—
Founing	40	30	10	50	40	10	—	—	—
Yencheng	50	30	15	60	40	20	—	—	—
Hsinghua	30	25	20	25	20	16	—	—	—
Tungtai	115	95	75	—	92	55	—	—	—
Taihsien	—	—	—	75	45	20	—	—	—
Jukao	80	60	35	60	40	30	—	—	—
Tsingkiang	—	—	—	100	60	40	—	—	—
Nantung	—	—	—	65	55	45	—	—	—
Haimen	120	100	80	100	80	60	—	—	—
Chitung	40	30	20	70	60	50	—	—	—
Average	88	63	32	78	57	32	32	18	10

During recent years, land prices have shown a very considerable drop, especially in districts north of the Yangtse as a result of a general dislocation of the rural economic system consequent upon the disastrous floods in 1931 and other calamities. In Hsiaohsien, the drop amounts to 10 per cent, in Paoying, Huaian, Suchien, Kangyu and Chitung, 20 per cent, in Shuyang and Kaoyu, 30 per cent, while in Tungshan, high grade land falls by about 30 per cent, the medium and low grades falling respectively by 25 to 23 per cent. The slump in land prices is even more conspicuous in Hsinghua and Suining where the value per *mou* of high grade land declines by from 70 to 75 per cent, that of the medium and low grades, respectively from 50 to 60 and from 30 to 40 per cent.

CHAPTER II

RURAL ECONOMY

FARMERS in Kiangsu Province may be classified into four categories as follows:

1. Landowners—These cultivate their own land.

2. Owner-tenants—are so called because they cultivate land for others in addition to their own.

3. Tenants—These rent land from landlords.

4. Agricultural Laborers—These are employees on farms. They have no regular working hours and are paid daily, monthly or yearly, according to the type of arrangement they make with their employers. Wages range very widely.

A recent investigation conducted by the Ministry of Industry reveals the fact that land in Kiangsu has been fairly distributed among the rural population. There are no less than 37 per cent who are small landowners, the remainder consisting of 29 per cent of tenants, 26 per cent of owner-tenants, and small number of hired laborers. Paupers are relatively few. The table below shows the necessary details:

	Landowners.		Owner-tenants.		Tenants.		Agricultural Laborers		Total	
	Families.	%	Families.	%	Families.	%	Families.	%	Families.	%
Taitsang	——	20	——	57	——	20	——	3	143,089*	100
Nanhui	35,898	50	17,949	25	15,794	22	2,154	3	71,795	100
Fenghsien	6,000	20	9,000	30	13,000	45	1,500	5	30,000	100
Sungkiang	30,165	50	12,135	19	7,684	13	10,301	18	60,285	100
Chuansha	5,000	35	3,000	23	5,000	35	1,000	7	14,000	100
Shanghai	1,794	10	1,794	10	6,280	35	8,073	45	17,941	100
Tsingpu	1,624	4	12,180	30	24,360	60	24,360	6	40,600	100
Wukiang	13,541	17	28,654	32	31,659	34	15,415	17	88,269	100
Wuhsien	115,415	75	3,777	20	7,695	5	——	—	153,887	100
Kunshan	10,528	30	15,880	50	6,352	20	——	—	32,765	100
Kiating	12,750	30	13,000	40	12,750	30	——	—	42,500	100
Paoshan	113,253	75	4,651	15	2,170	7	930	3	31,004	100
Tsungming	33,300	30	44,280	40	27,680	25	5,535	5	110,705	100
Changshu	——	15	——	30	——	50	——	5	——	100
Wusih	——	70	——	20	——	9.5	——	0.5	——	100
Kiangyin	29,334	42	83,608	30	47,773	16	35,803	12	286,518	—
Wuchin	154,960	80	23,234	12	9,685	5	5,211	3	193,090	100
Ihsing	11,604	13	42,840	48	27,671	31	7,142	8	89,257	100

*Number of farmers.

Liyang	16,674	30	16,675	30	11,110	20	11,126	20	55,583	100
Kaoshun	2,133	10	7,688	36	8,340	39	8,130	15	21,291	100
Lishui	2,000	5.4	15,000	40.5	20,000	541	——	—	37,000	—
Chuyung	14,842	60	2,927	12	3,903	16	2,729	12	24,401	100
Kiangpu	30,000	33	10,000	11	40,000	45	10,000	11	90,000	100
Luho	25,500	60	6,375	17	8,510	20	2,125	5	42,510	100
Icheng	——	15	——	25	——	55	——	5	——	100
Chinkiang	43,000	50	25,800	30	12,900	15	4,300	5	86,000	100
Chintan	——	59	——	20	——	20	——	1	——	100
Tanyang	66,096	65	23,385	23	10,168	10	6,033	11	101,685	100
Yangchung	——	115	——	20	——	30	——	25	——	100
Taihsien	60,000	5	100,000	15	500,000	75	40,000	5	700,000	100
Kiangtu	——	20	——	15	——	55	——	10	——	100
Kaoyu	132,351	45	58,823	20	73,529	25	29,411	10	294,114	100
Paoying	29,178	40	7,289	10	32,900	45	3,645	5	73,012	100
Huaian	63,000	50	31,500	25	25,200	20	6,300	5	126,000	100
Huaiyin	——	60	——	20	——	10	——	10	——	100
Ssuyang	——	42	——	38	——	15	——	5	——	100
Suchien	——	30	——	50	——	15	——	5	——	100
Suining	4,460	4.6	46,000	47	38,000	39	8,920	9.4	97,380	100
Tungshan	71,051	50	53,994	38	11,377	8	5,684	4	142,106	100

Hsiaohsien	24,474	30	33,260	40	20,852	25	4,206	5	——	100
Tangshan	41,113	70	11,763	110	4,117	7	1,764	3	58,817	100
Fenghsien	50,000	86	5,000	7	4,000	5	1,000	1	60,000	100
Peihsien	——	90	——	4	——	4	——	11	——	100
Peihsien	127,896	80	20,783	13	7,996	5	3,197	2	159,872	100
Shuyang	——	30	——	10	——	55	——	5	——	100
Tunghai	21,450	45	16,500	34	3,300	7	6,600	14	47,850	100
Kuanyun	25,312	26	1,235	12	43,720	46	15,001	16	96,257	100
Kangyü	8,469	12	21,173	30	40,934	58	——	—	70,577	100
Founing	3,078	20	4,617	30	6,156	40	1,539	10	15,390	100
Yencheng	40,800	21	46,700	25	82,000	42	22,500	12	192,000	100
Hsinghua	36,000	30	36,000	30	24,000	20	24,000	20	12,000	100
Tungtai	46,800	30	40,500	25	64,400	40	8,100	5	159,800	100
Taihsien	52,400	40	43,200	33	32,750	25	2,620	2	130,970	100
Tsingkiang	40,041	58	13,810	20	13,810	20	1,376	2	69,037	100
Nantung	162,960	15	271,600	115	630,112	58	21,728	2	1,086,400	100
Haimen	167,852	26	193,652	30	277,569	43	6,455	1	645,510	100
Chitung	3,831	7	830	15	41,049	75	1,642	3	54,739	100
Average	——	37	——	26	——	29	——	8	——	100

AGRICULTURAL IMPLEMENTS

The low productivity of Chinese farmers is mainly attributed to the primitive implements used. Although many attempts have been made to improve them, very little result is obtained. One of the establishments manufacturing modern farm implements was organized by the Kiangsu Provincial Government in 1927, but owing to limited output, the products of this factory can hardly reach distant farms. Moreover, on account of their high prices as compared with those of old-fashioned tools, it is beyond the means of average farmers to provide themselves with these new devices.

FORMS OF TENANCIES

The relation between landlords and tenants varies at least in five forms:

1. Landlords provide the tenants only with land.
2. Landlords provide the tenants with land as well as farms.
3. In addition to land and farms, landlords supply the tenants with a part or the whole of the necessary capital, including implements of husbandry, cattle, fertilizers, seeds, etc.
4. Landlords plow and sow the soil themselves, leaving the other work to the tenants. In this case, the tenants' share in the harvest of the crop may be very small.
5. Landlords and tenants share the ownership of land, the latter having the exclusive right of cultivating the soil. The tenants also reserve the right to transfer the land to other farmers. Landlords of this type receive comparatively low rent and are said to have possessed only the "soil beneath the field" while the tenants own the "surface of the land."

The agreement made between a landlord and his tenant when a lease is effected may be either verbal or written. In both cases, there is always a third person who serves in the capacity of a witness or middleman. The terms provided in the agreement usually include the length of tenancy, which ranges from one year to an indefinite period of time (perpetual lease), the amount of rent and the procedure of its payment.

Although many farmers prefer to pay rent in cash, it has been a widely prevailing practice for tenants to settle their obligations by giving up a part of their agricultural produce. The amount is either the same every year or in a definite proportion to the total yield from the land. In the same manner, farmers very often pay their employees a part, usually one-fifth, of their harvest instead of cash.

Rent payable either in money or in kinds varies with the kinds of fields which are divided into first, second and third classes, and are again into two main categories, the dry fields and water fields. The ratio of rent to the value of the harvest for these fields are as follows:

	Water field	Dry field
	%	%
Rent in money		
First class	8.1	8.6
Second class	8.2	9.5
Third class	8.7	10.4
Rent in Kinds		
First class	44.3	39.4
Second class	48.6	42.0
Third class	49.9	38.3
Payment for hired laborers		
First class	46.7	44.2
Second class	45.4	44.5
Third class	43.4	46.8

In addition to rent, farmers in many districts are further obliged to deposit a sum of money with the landlords in security for regular payment of rent. The following table shows the ratio of this deposit to the average rent per *mou* of leased land in 20 different localities of the province:

	Deposit.	Rent.		Deposit.	Rent.
Tsingkiang	$20-30	$11.83	Liyang	$ 4-5	$11.35
Kiangning	2	4.49	Huaian	4-5	9.60
Chintan	2	11.24	Haimen	4-5	5.81
Luho	2	9.03	Kaoshun	4-5	6.15
Paoying	2	11.10	Kunshan	6	7.00
Chinkiang	4- 5	2.69	Fenghsien	6	6.50
Ihsing	4- 5	9.52	Tsungming	6	6.75
Wuchin	4- 5	12.52	Changshu	10	8.00
Kiangtu	4- 5	12.94	Kiangyin	10	7.88
Taihsing	4- 5	11.70	Sungkiang	10	10.85

INCOMES AND EXPENDITURES OF THE RURAL POPULATION

There are no complete and reliable statistics available concerning the exact financial status of the farming population in Kiangsu Province, but an investigation recently conducted by the Ministry of Industry into 140 families in Shanghai revealed that the average annual income per family amounted to approximately $322.70, of which 54.60 per cent had been derived from agricultural products, 42.5 per cent from subsidiary industries and 2.90 per cent from miscellaneous sources. In the Municipality of Greater Shanghai, the average yearly income per family (the investigation covering 106 families) is $282.30, of which 74.40 per cent consists of revenue from agricultural products and 25.60 per cent from secondary business. Farmers in other districts receive much less as compared with those in Shanghai. A vast number of farmers falls into debts owing to insufficient revenue.

With regard to agricultural laborers, the wages they receive vary greatly with the different localities. In general, those who are employed for short labor are given comparatively high pay. The following table shows the details:

	Male			Female		
	Wage per Day.	Wage per Month	Wage per Year.	Wage per Day.	Wage per Month.	Wage per Year.
Nanhui	$0.25	$ 6	$36	$0.20	$5	$24
Fenghsien	0.25	4	40	0.20	3	30
Sungkiang	0.30	9	108	0.20	6	72
Chuansha	0.80	8	85	0.70	5	45
Shanghai	0.30*	5	50	0.20*	4	—
Tsingpu	0.20-0.50	—	40-70	0.20-0.50	—	—
Chinshan	0.30	3	36	—	—	—
Wukiang	0.50	12-14	50-70	0.40	—	—
Kunshan	0.40*	15*	30†	0.40*	—	—
Kiating	0.25†	6†	50†	0.20†	—	—
Paoshan	0.40	12	70	0.25	7	50
Tsungming	0.25	3	36	0.15	1.50	18
Taitsang	0.50	5	40	0.40	4	40
Changshu	0.50-0.60	12	60-120	0.30	8	—

Wusih	0.30	6	60	0.25	5	—
Kiangyin	0.50	4	40	0.30	2	20
Wuchin	0.40	8	55	0.20	3	25
Ihsing	0.30	8	70	0.20	5	50
Liyang	0.20-0.40	5	40-50	0.25	3	10-20
Lishui	0.20-0.30	5-8	40	0.14-0.20	2-4	30
Chüyung	0.30†	5†	50†	0.20†	3†	30†
Luho	0.33	9	100	0.25	6	70
Icheng	1.00	12	140	0.50	8	100
Chinkiang	0.25	6	60	0.15	4.50	48
Chintan	0.30-0.50	6-10	40-60	0.20-0.40	4-8	20-40
Tanyang	0.50	10	50	0.30	6	70
Yangchung	0.25	5	30	0.15	2	15
Taihsing	0.25	1-2	20-30	0.10-0.15	0.50-1	10-20
Kiangtu	0.30	6	50	0.20	5	—
Kaoyü	0.50	6	50	0.15*	4	30
Paoying	0.40*	3*	20*	0.20*	1*	10*
Huaian	0.55†	10†	40†	0.45†	7†	—
Huaiyin	0.20-0.50	7	40*	0.20-0.50	—	—
Ssuyang	0.50	7	36	0.40	6	26
Suchien	0.50	8	40	0.40	6	30
Suining	0.15-0.25	—	25-35	—	—	12
Wuhsien	0.50	—	50	0.30	—	—
Tungshan	0.40	—	25	0.20	1	10
Hsiaohsien	0.40	2†	25	—	1†	12
Tangshan	0.20	4	30	0.10	2	15
Fenghsien	0.40	3	25	0.20	1.50	10
Peihsien	0.30	—	30	—	—	10
Peihsien	0.40	8	100	0.30	5	60
Shuyang	0.40*	8*	40*	0.30	6*	—
Tunghai	1.00	8	96	0.80	6	72
Kuanyun	0.30	7	72	0.20	4	40
Kangyu	1.00	15	130	—	8	80
Lienshui	0.30	3	25	0.25	2	15
Founing	0.40	4	40-60	0.30	2	20
Yencheng	0.20	5	50	0.15	2	20
Hsinghwa	0.40	10	100	0.30	—	—
Tungtai	0.30	9	90	0.24	6	70
Taihsien	0.25	—	60	0.20	—	—
Jukao	0.25	3.50	18-26	0.20	2.50	12-26
Tsingkiang	0.40	8	80	0.30	6	—
Nantung	0.25	2-8	20-60	0.20	2-5	10-30
Haimen	0.30-0.50	9-12	120	0.15-0.35	6-9	74
Chitung	0.14*	4†	30†	0.12*	3*	20†
Average	0.35	6.90	51.30	4.27	4.20	33.20

*With board.
†With board and lodging.

RURAL FINANCE

Bad crop, bandit activities, excessive tax, high prices of other commodities in comparison with agricultural products and prohibitive interest on loans combine to render the financial position of many farmers extremely difficult. In villages and small towns, where bank facilities are not available, farmers usually resort to private individuals and pawn shops for loan accommodations. The rate of interest charged is usually prohibitively high, ranging between 1.20 to 10 per mille per month.

One peculiar form of loan arrangement among farmers consists in forming a *hui* (會) or an "association," which assumes a temporary nature. The usual way of handling the matter is simple enough. Each member of the "association" hands an equal amount of money to the manager (who is one of the members) at stipulated intervals, the lump sum thus collected going to one of the members. The order in which members draw money is determined by lot, the winner being given priority. In actual practice, of course, there are many modifications to this simple form of loan operation, but in no case does the principle differ.

The year 1926 saw the inauguration of the Kiangsu Farmers' Bank in Chinkiang by the Provincial Government with a number of branch offices scattered in Nanking, Wusih, Changshu, Wukiang, Wuchin, Kaoshun, Sunkiang, Kunshan, Tanyang, Tsingpu, Jukao, Tungshan, and Kiating. This bank loans to farmers seeds and fertilizers as well as cash, and from July 1, 1931 to June 30, 1932, it accommodated the rural population in various districts with a total of $4,153,245, distributed as follows:

Loans to co-operative societies	$1,739,524
Loans secured on agricultural products	380,982
Loans to small farmers	383,736
Loans to farmers' organizations	388,286
Loans to Provincial Government for the development of agriculture and the relief of poor farmers	1,260,717

COOPERATIVE SOCIETIES

Another movement to the great advantage of the rural population is the co-operative credit movement. Co-operative stores in Kiangsu owe their origin to the efforts of the Provincial Government in 1928, when a school for training co-operative instructors was established by Mr. Ho Yu Shu, then Commissioner of Agriculture and Mining. Graduates from the school were sent to various districts to assist farmers in organizing co-operative societies. The movement has been growing very rapidly and at present, the number of co-operative societies in Kiangsu is 1,609, with 2,673 members, being 58.23 per cent of total number of societies in the whole country, while the number of members, 48 per cent, as shown below:

	China.	Kiangsu.	Kiangsu's Share (%)
No. of co-operative societies	2,673	1,609	58.23
No. of members	98,778	47,561	48.00
Total capital	$972,919	$483,518	50.00

The distribution of the 1,609 co-operative societies in the province is as follows:

Kiangning	75	Tanyang	154
Kiating	33	Kunshan	37
Nantung	34	Yencheng	32
Paoying	17	Kangyu	11
Chüyung	38	Chintan	9
Paoshan	15	Wukiang	75
Jukao	33	Kiangtu	29
Fenghsien	3	Lishui	1
Liyang	65	Tsungming	5
Wuchin	95	Taihsing	7
Icheng	3	Hsiaohsien	46
Kaoshun	145	Sungkiang	87
Chitung	1	Wusih	26
Huaiyin	66	Tungtai	13
Suchien	28	Kiangpu	10
Nanhui	4	Haimen	10
Ihsing	35	Huaian	49
Hsinghua	3	Suining	1
Luho	3	Tsingpu	20
Wuhsien	37	Kiangyin	16
Lienshui	14	Taihsien	4
Kuanyun	4	Chinkiang	100
Chinshan	15	Changshu	64
Tsingkiang	3	Founing	9
Kaoyü	8	Shuyang	12

There are at present six main types of co-operative societies in operation in Kiangsu, each performing its own distinctive functions, as follows:

A. Co-operative purchasing societies,

B. Co-operative productive societies,

C. Co-operative marketing societies,

D. Co-operative milling and mechanical societies,

E. Co-operative credit societies, and

F. Others.

The distribution of the above mentioned six types of co-operative societies is as follows:

	1928.		1929.		1930.		Jan-June. 1932.	
	No.	Percentage.	No.	Percentage.	No.	Percentage.	No.	Percentage.
Type A	5	1.6	12	1.7	42	5.4	73	4.9
B	20	6.5	47	7.3	160	1.3	200	12.9
C	4	1.3	4	0.5	7	0.6	7	0.5
D	—	—	—	—	9	0.7	8	0.5
E	280	90.6	605	90.5	949	77.4	1,052	68.1
F	—	—	—	—	59	4.9	203	13.1
Total	309	100.0	668	100.0	1,266	100.0	1,545	100.0
Districts covered	20		31		50		50	
Members	10,971		21,175		38,280		45,892	
Paid capital	$46,371.00		$96,453.11		$266,885.20		$290,968.50	

CHAPTER III

FARMERS' SECONDARY OCCUPATION

THE SECONDARY occupation of farmers in Kiangsu varies with localities, but they can generally be classified into seven groups. The first group contains knitting, spinning, and weaving of cotton and silk fibres with old style wooden looms and machines. To the second group belong bamboo, willow, reed, and rush works. In the third group may be placed the making of cord and net. Under the fourth group may be mentioned the animal breeding and raising, the fifth manufacturing, the six sewing and embroidering, and the seventh fishing and hunting.

The weaving of nankeen is the most popular business among the seven groups. Out of 61 *hsien* in Kiangsu this is the most important secondary occupation of farmers in 31 *hsien*. There are 25 *hsien* with the making of mats as principal secondary business, in 18 rush bags and in 19 straw shoes are considered as important products of the farmers, besides their agricultural products. The following table shows the distribution of various secondary business in different districts in Kiangsu:—

Nanhui—Nankeen, rush bags.
Chuansha—Lace, towels.
Tsingpu—Weaving, lace, plaited goods of wheat and rice stalks.
Sunkiang—Nankeen, breeding of bees, rush bags.
Shanghai—Cotton yarn and piece goods.
Chinshan—Nankeen, Straw shoes, cords, joss money.
Wukiang—Net, breeding of bees and silkworms, brewage.
Kiating—*Hwang Ts'ao* bags and shoes, nankeen, bamboo works.
Tsungming—Nankeen, breeding of bees.
Changshu—Nankeen.
Kiangyin—Nankeen.
Ihsing—Weaving of cloth, rush mats, rush screen, toilet paper, straw shoes, bamboo goods.
Kaoshun—Nankeen.
Kiangning—Satin, bricks and tiles.

Kiangpu—bamboo articles, reed mattress, reed basket.
Icheng—Bean flour noodle, mats, brewages, pressing of oils, straw shoes, coir rope.
Chintan—Raw silk and cocoon, straw shoes, towel, rush mats.
Yangchung—Pongee, bamboo basket, mats.
Kiangtu—Grasscloth, sandals.
Paoying—Arrowroot, rush goods, straw shoes, rush bags.
Wuhsien—Mats, embroidered goods, brewage, raw silk, weaving, felt mattress, bricks and tiles, reed mattress, straw fans, rush bags.
Paoshan—Nankeen, towels.
Taitsang—Grasscloth, nankeens.
Wusih—*Hwang Ts'ao*, silk thread, bamboo basket, hosiery-making, reed sheet, nankeen, lace, breeding of silkworms.
Wuchin—Nankeen, breeding of silkworms, reed mattress and sheets, bamboo basket, raising of chicken, cattle, pig and sheep.
Liyang—Cocoon, pongee, cloth, reed hat.
Lishui—Silkworm culture, fish culture, weaving.
Chuyung—Nankeen, straw shoes, shoes, straw braid.
Luho—Reed goods, bamboo articles, rush shoes.
Chinkiang—Weaving of pongee, reed mattress, lime, nankeen, silkworm culture, fish breeding, grasscloth samshu, earthenwares.
Tanyang—Pongee, nankeen, breeding of bees, silkworm culture, fish-breeding, pottery, brewage.
Taihsing—Pig, chicken, duck, wine.
Kaoyu—Straw shoes, reed mattress, making of nets.
Huaian—Steaming basket, rush bags, bamboo goods, drums.
Huaiying—Nankeen, reed mattress, straw hat.
Suchien—Sanitary paper, mulberry bark paper, bean flour noodle, reed mattress, rush bags, straw shoes, willow goods, small agricultural instruments, silkworm culture.
Tungshan—Nankeen, willow goods, brushes, reed shoes, mats.
Tangshan—Nankeen, wicker, reed and rush mats, bean flour noodle, rush bags, rush mats.
Peihsien—Culture of bees and silkworms, mats, towels.
Shuyang—Reed mats, bamboo articles.
Kuanyun—Rush bags, reed mattress, hempen cord, bamboo screen.
Lienshui—Weaving, breeding of bees.
Yencheng—Rush goods, reed mattress, nets.
Tungtai—Straw shoes, rush bags.

Nantung—Spinning of cotton yarn, weaving of cloth, silkworm culture, thread, tape.
Chitung—Spinning of cotton yarn, weaving of cloth, straw shoes, breeding of sheep and poultry.
Ssuyang—Straw shoes, rush bags, bamboo articles, nankeen, sanitry paper, hempen cord.
Suining—Wicker, nankeen, rush bags, reed mattress, bean flour noodle, hair net, shoes.
Hsiaohsien—Reed mattress, nankeen, wicker, straw shoes, reed shoes.
Fenghsien—Wicker, reed shoes, mats, making of saltpeter.
Peihsien—Nankeen, reed mattress, rush bags, rush fans, wickers, bamboo articles, fishing, brewage, groundnut oil.
Tunghai—Reed mattress, rush bags.
Kangyü—Straw shoes, farmers' raincoat.
Founing—Reed mattress, wicker, rush bags.
Hsinghua—Indigo, brewage, wine, preserved crabs.
Chinkiang—Nankeen, rush bags, bamboo works.
Haimen—Weaving of cloth.

RAW MATERIALS

The variation of secondary business in different districts is due to the presence of different raw materials in different districts, but in some places raw materials are obtained as by-products of the secondary business. For instance, in some districts northern of the Yangtse River farmers get fertilizers from breeding pigs, cattle, and chicken. Sometimes brewage in some cities are undertaken by farmers for distilled grain as fodders for domestic animals.

LOCATION AND SECONDARY BUSINESS

There is a close relation between the location of the district and the nature of secondary business. In districts with convenient means of communications or within cotton mill zones, like Shanghai and Wusih, cotton weaving is the principal secondary business. In Wuhsien, Wuchin, Chinkiang, Tanyang, Kiating, Taitsang, Sunkiang, Nanhui, Tsingpu, Chinshan, Ihsing, Liyang, Lishui, Kaoshun, Chuyung, Tsungming, etc., owing to their nearness to cotton mills, the weaving of nankeen forms the important secondary occupation of farmers. Huaiyin, Suchien and Lienshui having the Grand Canal for shipping cotton yarn

from Shanghai, Wusih, Nantung, Haimen, Chunkiang, Chitung, Ssuyang, Suining, Peihsien, Hsiaohsien, Tangshan, etc., with the supply of cotton yarn from Nantung and Tungshan, all turn out large quantities of nankeens.

Farmers in the districts along sea coast, like Kangyü, Tunghai, Kuanyun, Founing, Yencheng, Tungtai, Jukao, Nantung, Haimen, Chitung, Tsungming, Chuansha, and Nanhui have developed fishing and crab-catching as their secondary business. Tanyang and Chinkiang, owing to their favourable location, have developed the culture of fish and making of nets and cord as secondary business to farmers.

Hosiery-making has recently been important secondary business to farmers, but this industry is limited to farmers living near to the districts having hosiery plants, like Sunkiang and Wusih. This is because the plants usually distribute raw materials and looms to farmers, who may make hoses at home. Rush bags, being used in very large extent for packing salt in many districts northern of Yangtse River, such as Tunghai, Kuanyün and Yencheng, are made largely by farmers, when they are not busily engaged in field works.

SPECIAL SECONDARY OCCUPATIONS

HUANG TS'AO PRODUCTS

The weaving of *ssu ching huang ts'ao* (絲經黃草) or "Silk Warp Yellow Grass" and *Huang Ts'ao* (黃草) or "Yellow Grass" in Wusih and Kiating and embroidering in Wuhsien are occupations secondary to the works of the farmers in the field. *Huang ts'ao*, or "Yellow Grass" is grown in Wukiang, and shipped almost exclusively to Wusih to be made into grasscloth in the villages of Nan Fang Chuan (南方泉) and Hsu Shê (許舍). "Yellow Grass" seed is sowed in April or May, cut in July or August, and sold to Wusih farmers at 15 or 16 catties for one dollar.

There are five *huang ts'ao hong* in Nan Fang Chuan and Hsu Shê, where the grass is sold in bundles of about ten stalks. The weaving of grasscloth is done by women as a cottage industry. From February to August the female

members of farmers' families are busily engaged in making grasscloth, but stop this work in the latter half of the year, when the air is dry and the grass becomes fragile and breaks very easily.

The method of preparing the raw material is very simple. Having left the grass soaking in nearby brooks for some ten days, the weavers cut it in such a way that when put in a mixture of lime and water it will decompose rapidly, leaving only the fibres intact. These are rinsed and carefully separated by hand so that they may be joined end to end to make threads.

Grasscloth made of *huang ts'ao* is of three varieties, the *ssu chin huang ts'ao*, the *huang pu* (黃布) or "yellow cloth" and the *ts'ao pu* (草布) or "grasscloth." The *ssu chin huang ts'ao* is woven with a silk warp and *huang ts'ao*, or a mixture of one *huang ts'ao* and one silk thread as woof. The *huang pu* and *ts'ao pu* are woven with *huang ts'ao* as both warp and woof, the finer quality being known as *huang pu* and the coarse as *ts'ao pu*.

Ssu chin huang ts'ao is used as a substitute for linen in making clothes while *huang pu*, after being dyed yellow with liquid extracted from a kind of flower known as *chu tze hua* (梔子花, *Gardenia florida*, L.) is used for lining the robes worn by Chinese actors and put on figures in Chinese temples. *Ts'ao pu* is used like gauze for sifting purposes. *Ssu chin huang ts'ao* (12 inches wide and from 40 to 200 feet long) costs from 20 to 26 cents a foot, *huang pu* is worth about 10 cents per foot, while *ts'ao pu* (four or five feet long and seven to eight inches wide) costs four or five cents a foot. These goods are mainly consumed locally, only a small quantity being sold to Shanghai through silk piece-goods stores in Wusih.

The huang ts'ao goods from Nan Fang Chuan are mostly *huang pu* and *ts'ao pu*, while Hsu Shê produces more *ssu chin huang ts'ao* than the two coarser varieties. In the following table is given the approximate number of families engaged in this industry and the annual output in Nan Fang Chuan and Hsu Shê:—

	Families.	Output.	Value.
Sru chin huang ts'ao	1,000	160,000 ft.	$40,000
Huang pu	2,000	750,000 ft.	80,000
Ts'ao pu	3,000	80,000pcs.	30,000

When the weaving of *Huang ts'ao* was in its golden age the annual export of the product to the Straits Settlements, the United States, and Japan was valued at about $400,000. But now owing to the reduced demand, products only of a little over $100,000 are shipped abroad annually.

Huang ts'ao is also grown in Hsuchiahong (徐家行) in Kiating, and is quite easy to grow, nothing else than night soil being needed for fertilization. When fully grown it is as tall as 4 feet.

The planting of *Huang ts'ao* in Hsüchiahong is not considered as a very important business, usually at the side of paddy fields. Calculated on the basis that there are 2,000 families in Hsüchiahong engaged in cultivating *huang ts'ao*, each family planting 0.3 *mou* of paddy field and the output of *huang ts'ao* per *mou* being 5 piculs, the total product will be 3,000 piculs per year valued at $30,000. After being reaped, *huang ts'ao* is to be dried in the sun, and only the rind is used.

There are quite a number of *huang ts'ao* products, food bags and slippers being the most important, money bags, bookcase, sandals, and hats the next. Food and money bags largely go to abroad, because of its light weight and low prices. Slippers and bookcase are sold far and wide in the country.

In 1921 Chu Shih Lin (朱石麟), a native of Kiating established the Hsing Yieh Plaiting Co. (興業草織公司) to export *huang ts'ao* products abroad. In 1923 the business became so well developed that there were over 20,000 country people engaged in the industry and their output was valued at $400,000. At the same time the number of plaiting companies increased from one to six. Since 1927 the business began to decline.

The Hsing Yieh Co. was established without petitioning the Government for a patent. Seeing that the company has made a great profit, dealers tried to outsell the products of

this company at reduced price. The exporting firms were interested in the low prices only, paying no attention to the quality of the goods. They made large orders from dealers instead of from the Company, thereby causing the downfall of the company.

As the *huang ts'ao* products are made entirely with manual labour when the farmers are not busy with farm work, the output of the articles is very slow, while the orders made by the exporting firms usually demand the delivery of several thousand pieces in a definite period of time. In order to execute the order without delay very often articles inferior in quality to what have been specified have been delivered.

Although the Hsing Yieh Co. has established factories and school to train the farmers, they would not work in the factory regularly when they have learned how to make those articles, but prefer to work at home at their own will. Without definite place and time to work the efficiency of the farmers will no doubt be affected. Therefore, the company is often unable to meet the demand as they cannot control the supply.

When the plaiting company receives an order from an expo rting firm they can only order them from the farmers, because it is very difficult for the company to employ operatives to work in their own factories for the reason given in the last paragraph. To be punctual the company cannot but take the price asked by the farmers.

Transactions between the importing firms abroad and the plaiting company here is not direct. This gives the compradores of the importing firms the chance to handle the business as they desire without considering the credit of the company or the exporting firm.

EMBROIDERING IN WUHSIEN

Embroidering is the special business of Wuhsien women and girl, especially in the country at Hsushukuan (徐舒關), Mutu (木渡), Kuangfu (光福), and Hsiangshan (香山). In the period from 1921 to 1926, about $500,000 worth of business was done annually. Before the establishment of the Chinese Republic embroidered articles were

largely sold to Hunan, Hopei, Shansi, etc. but now they are sold locally or to Shanghai. Goods sold to foreigners or exported abroad are handled by the *ku i* shop (估衣店) or clothes shops. The embroidering designers were at first so conservative that they did not know to change their designs in order to keep up with the tastes of their customers. Moreover, the goods were largely made in large pieces. But now, the designs are changing and the goods are sold in sizes as the customers desire them.

There are altogether fourteen shops dealing in embroidery articles in Wuhsien, the famous ones being Tien Cheng Yung (天成永), Heng Chi Tai (恆吉泰), Yuan Li (源利), Yung Tai Hsiang (永泰祥), and Wan Yü (萬裕), but Sheng Kang Tai (盛康泰), Yung Hsing I (永信義), Shang Tai Chang (尙泰昌), Hung Yuan (鴻源), Chin Tai Chang (錦泰昌), Chü Yuan (聚源), Cheng Kee (正記), Heng Sheng Jen (恆生仁), and Tsai Heng Sheng (蔡恆生) are also some of the noted shops. Although the business is not so prosperous now as it used to be according to an estimate, those shops still handle over $100,000 worth of business every year. The wages pay to the workers ranges from $2 to $5 per square foot. The principal use of the embroidered goods are for bed-covering, dresses and ornaments.

CHAPTER IV

COMMERCE

Business customs in Kiangsu vary but slightly in different districts. In small transactions, sales are generally by cash. When retailers buy from wholesalers, partial credit is usually given. Throughout the province, it has been a long established practice for business men to settle accounts three times a year on the Dragon Boat Festival, the Mid-Autumn Festival and the New Year's Eve (lunar calendar). In places where farmers derive their income mainly from the rice or cocoon crop, payments are made after the time of harvest.

With the exception of very few large stores, which are organized in accordance with the corporation law, shops, particularly those in rural districts, are single proprietorships or partnerships with capital consisting of personal contributions as well as deposits from the relatives and friends of the proprietors, though in large cities, where banking facilities are available, it is not infrequent for shop-owners to borrow a part of their shops' initial capital from banks and cash shops.

Country fairs known as *chi* (集) and *lo* (落) are still popularly held in this Province, the former taking place irregularly once or twice a year, while the latter, at definite intervals of five, ten or fifteen days. Articles sold are largely agricultural products. In addition to direct transactions between producers and consumers, business is sometimes done through brokers on commission basis. The cattle and pig *hong* in Tangyang are typical examples.

FOREIGN TRADE

Kiangsu, the most developed and densely populated province in China, has the largest imports and exports of all provinces. Figures of Kiangsu's share in China's foreign trade can easily be obtained from the Customs Returns, while statistics for the inter-provincial are not available, and it is especially difficult to estimate the amount of trade between districts. The following table

shows the value in thousands of Haikuan taels import and export of the four ports in Kiangsu from 1868 to 1931:—

EXPORTS.

	Shanghai	Nanking	Soochow	Chinkiang	Total
1868	39,153	——	—	——	39,153
1878	38,303	——	—	——	38,303
1888	36,460	——	—	——	36,460
1898	69,084	——	—	960	70,044
1908	126,802	——	—	1,604	128,406
1913	176,858	——	—	573	177,431
1918	201,290	269	—	562	204,041
1919	259,728	6,759	—	540	267,027
1920	193,795	6,648	—	287	400,730
1921	210,527	1,522	—	352	213,406
1922	218,501	3,688	—	247	222,436
1923	276,838	4,036	—	285	281,159
1924	276,454	2,497	—	144	279,095
1925	306,185	3,429	—	78	309,692
1926	361,899	6,059	21	31	368,010
1927	300,506	101	18	33	300,658
1928	362,220	2,800	24	26	365,070
1929	364,040	3,716	16	1	367,773
1930	312,667	3,651	9	——	316,327
1931	227,476	345	53	215	227,909

IMPORT.

	Shanghai	Nanking	Soochow	Chinkiang	Total
1868	50,478	——	—	——	50,478
1878	49,117	——	—	——	49,117
1888	68,433	——	—	22	68,455
1898	126,631	——	—	503	127,134
1908	176,196	176,217	129	5,540	358,082
1913	244,452	2,645	19	3,819	250,935
1918	214,967	1,659	31	4,373	221,030
1919	261,701	3,120	49	3,800	268,670
1920	388,917	4,411	43	5,614	298,985
1921	425,513	8,274	75	5,572	439,434
1922	429,593	8,562	28	4,773	432,956
1923	417,870	3,845	52	3,646	425,413
1924	483,469	3,968	58	3,821	491,316
1925	431,887	4,347	50	5,434	441,718
1926	596,555	4,324	43	5,164	606,086
1927	455,317	941	46	4,047	460,351
1928	548,607	1,049	92	5,741	555,489
1929	624,645	5,321	158	5,401	635,525
1930	679,741	8,919	215	8,451	697,326
1931	833,567	10,442	170	7,551	851,730

TOTAL EXPORTS AND IMPORTS

1868.....	89,631	1922.....	655,392
1878.....	77,420	1923.....	706,572
1888.....	104,915	1924.....	770,411
1898.....	197,178	1925.....	751,410
1908.....	486,488	1926.....	974,096
1913.....	428,366	1927.....	761,009
1918.....	425,071	1928.....	920,559
1919.....	535,697	1929.....	1,003,298
1920.....	799,715	1930.....	1,013,653
1921.....	652,840	1931.....	1,079,639

From the above table it may be seen that import of foreign goods is ever-increasing, while the export of home products, has been for the last decade decreasing. The rapid growth of imports can be attributed to the increased demand of foreign goods with the development of commerce of the country and the large demand of cotton and wheat by the cotton-weaving factories and flour mills.

There are nine commercial ports in Kiangsu, their name and the date of opening being as follows:—

Shanghai—Opened by the provision of the Nanking Treaty of 1842.

Nanking—Promised to open as a commercial port in 1858 by the Tientsin Treaty signed with the French.

Chinkiang—One of the eight ports opened in 1858 by the Tientsin Treaty signed with the British and French.

Sungkiang—Opened in 1896.

Wuhsien—Opened in 1895 by the provision of the Shimonoseki Treaty with Japan.

Wusih—Opened in 1922.

Pukow—Opened in 1912.

Tungshan—Opened in 1922.

Tunghai—Opened in 1905.

Only at four of the nine ports mentioned above have Customs been established, namely Shanghai, Nanking, Chinkiang, and Wuhsien.

Shanghai—The following table shows the value of imports and exports of Shanghai:

	Import		Export		Total Re-export.	
	Abroad	Home ports	Abroad	Home ports		
1922	419,593	263,609	98,857	207,565	989,715	357,725
1923	417,870	323,890	119,026	244,329	1,105,117	393,015
1924	483,469	315,630	120,529	263,913	1,183,543	406,732
1925	421,887	366,571	127,363	255,256	1,181,077	426,381
1926	596,555	403,810	152,185	317,342	1,469,893	497,606
1927	455,317	348,354	168,170	290,821	1,262,663	393,684
1928	548,607	397,510	182,623	336,665	1,465,407	436,350
1929	624,645	348,426	185,169	314,381	1,472,613	436,923
1930	679,741	335,754	162,900	371,086	1,549,482	403,906
1931	833,567	343,628	147,502	390,478	1,715,176	370,372

The above table shows the magnitude of trade in Shanghai. From the large amount of re-exports it may be seen that Shanghai is also a transitting port. The import of foreign goods in the ten years is almost doubled, while the increase of import of home products is only 30 per cent. A great increase is seen in the export of native goods to home ports, but there is little development in the export of native goods abroad.

Nanking—Cigarettes, flour, and cotton piece goods are the important articles imported into Nanking, the first named article being also the principal export, valued at Hk. Tls. 144,990 in 1931. Military supplies are likewise among the important items in exporting list.

The following figures in Hk. Tls. 1,000 show the import and export of Nanking Customs from 1922 to 1931:—

	Import		Export		Total Re-export.	
	Abroad	Home ports	Abroad	Home ports		
1922	8,562	17,545	3,306	12,400	41,814	821
1923	3,845	15,847	3,697	14,544	37,935	757
1924	3,968	15,692	2,485	15,452	37,598	594
1925	4,347	15,877	3,042	16,450	39,716	1,575
1926	4,324	19,515	5,356	16,728	45,925	939
1927	941	6,264	101	5,018	12,325	268
1928	1,049	11,190	2,767	5,568	20,575	277
1929	5,321	19,528	3,711	5,765	34,326	501
1930	8,919	16,011	3,542	4,832	33,306	854
1931	10,442	13,329	345	3,975	28,093	439

Soochow—Cigarette stands on the top of Soochow's import list valued at from Hk. Tls. 200,000 to Hk. Tls. 300,000 annually. Cotton yarn represents the largest proportion of export, amounting to about Hk. Tls. 200,000, with yellow cardboard next, at Hk. Tls. 130,000 in 1931. Piece goods and laces are other big items:—

	IMPORT		EXPORT			
	Abroad	Home ports	Abroad	Home ports	Total	Re-export
1922	28	6,240	—	20,095	26,364	3
1923	52	6,201	—	16,473	22,726	3
1924	58	5,419	—	10,377	15,854	1
1925	50	6,043	—	12,832	18,925	23
1926	43	6,954	21	13,003	20,023	9
1927	46	6,553	18	12,608	19,226	4
1928	92	5,285	24	10,021	15,424	6
1929	158	6,117	16	13,176	19,468	9
1930	215	5,067	9	7,817	13,109	15
1931	170	2,833	53	3,832	6,889	11

Chinkiang—Cotton yarn, flour, shirtings and sheetings, and cigarettes are exported from Chinkiang to the extent of over Hk. Tls. 100,000 annually, while among the exports, flour, matches and cement are the important article.

The following table gives the value in Hk. Tls. 1,000 of imports into and exports from Chinkiang:—

	IMPORT		EXPORT			
	Abroad	Home ports	Abroad	Home ports	Total	Re export
1922	4,773	16,951	247	1,573	23,545	1,078
1923	3,646	18,464	285	1,672	24,067	905
1924	3,821	18,786	144	5,618	28,370	607
1925	5,434	20,194	77	3,318	29,026	1,006
1926	5,164	23,184	31	1,914	30,295	1,094
1927	4,047	17,231	33	1,507	22,820	406
1928	5,741	22,315	26	2,247	30,330	570
1929	5,041	18,377	1	2,039	25,459	1,174
1930	8,451	17,431	—	1,852	27,736	556
1931	7,551	11,640	35	1,700	20,929	496

GENERAL CONDITIONS OF IMPORT AND EXPORT

Shanghai is the export and import, as well as re-export, centre of China. Textile fabrics, hardware, machinery, wheat, and cotton form the principal items in the importing list, while raw silk, tea, eggs and egg products are the important articles exported abroad. Cotton yarn, piece goods, chemical supplies and other home-made products are the principal exports to home ports.

Cotton, wheat, and rice are the chief import of Wusih. wheat coming largely from Ihsing, Tanyang, Nanking, Luho, Mingkuang (明光) and the United States; cotton principally from the United States and India, and also from Shensi, Shansi, Honan, Tungchow, and Taitsang. Although quite a large quantity of rice is imported into Wusih from Wuhu, Nanking, Ihsing, Wuchin, Kiangyin, Liyang, Tanyang, Mingkuang, Tungshan, Yingchow (颍州), and Kutsi (古巢), it is re-exported to other places. Oil-producing materials from Yingchow, Kiukiang, Hankow, Tangshan, Tanyang, Taihsien, Chinkiang, Luho, dried coccon from Chintan, Wuchin, Ihsing, Chinkiang, Changshu, and Liyang, satins and pongees from Chekiang, Shantung and Honan, silk and woollen fabrics from Tungchow, Tsungming and foreign countries, and nankeen from Sungkiang are also imported into Wusih in considerable amount. Among the exports from Wusih, raw silk, flour, cotton yarn, and bean oil play an important role, silk being shipped to Shanghai and re-exported abroad, flour going to the neighbouring and northern provinces, cotton yarn to Shantung, Honan, and some districts in the Province and bean oil to Ihsing, Liyang and Kiangyin.

Chinkiang has been a very prosperous port before the building of the Nanking-Shanghai Railway. What had been transported by boat through Chinkiang are now carried by trains direct to Shanghai. Very large quantities of beancakes and bean oil are exported from this city, the former going to South China and Changshu, Wuchin and Wusih, the latter to the interiors. Chinkiang formerly turned out quite a big quantity of satins and pongees, sold to North China and as far as Korea, but now the export of these articles is greatly reduced. Chinkiang is also the distributing centre of *tung* oil from Szechuan and Hunan,

it is from this port that *tung* oil is shipped to all ports of the country. Foodstuffs and groceries shipped through the upper Huai River districts, and rice and wheat from Auhui are collected at Chinkiang and re-exported.

Timbers and beans represent the chief imports of Wuchin, the former from Kiangsi and the latter from northern Anhui, but they are also the articles re-exported in large quantities to Wuhsien, Wusih, and Changshu, and other districts of Kiangsu and Chekiang. Plain cloth and dried cocoons are the two native products of Wuchin which are exported to a very large extent to Kiangning Chinkiang, Huaian, Yencheng, Hsinghua, Shakow (沙溝), Wusih and Shanghai.

Sungkiang is only 80 *li* from Shanghai. Rice is the staple export from Sungkiang, while cotton, foodstuffs, nankeen and hosiery are also among the important items. Rice, cotton and foodstuffs are sold mostly to districts in Kiangsu and Chekiang, especially to Shanghai, while nankeen and hosiery to places along the Yangtse River.

For the export of Ihsing, Liyang, Taitsang, Nantung, etc. and their markets reference may be made to the following table:—

	EXPORT.	MARKETS.
Ihsing	Rice	Kiangsu, Chekiang
	Wheat	Wusih, Wuchin
	Cocoon	Wuchin
Liyang	Rice	Hangchow, Shanghai, Changshu Wusih, etc.
	Cocoon	Shanghai, Wusih
	Silk residue	Huchow
Taitsang	Cotton	Shanghai, Wusih
	Beans and wheat	
Nantung	Cotton	Shanghai, Chinkiang
	Nankeen	The Three Eastern Provinces
	Oil and flour	Shanghai
Luho	Wheat	Shanghai, Wusih
	Foodstuffs	Pukow, Nanking, Chinkiang
	Eggs	Nanking
	Cocoons	Shanghai
Huaiyin	Wheat	Shanghai, Wusih
	Beans	Wuchin
	Pigs and eggs	Shanghai

Huaian	Wheat Beans	Kiangyen (姜堰), Wusih Wuchin, Kiangtu
Tunghai	Beancakes and bean oils Kaoliang	Hsupu (沛浦), Changshu Tsingtao
Kuanyun	Salt	Anhui, Honan, Kiangsi, Hupeh, Hunan
Tungtai	Paddy, wheat, salt and cotton	Shanghai, Wusih, Taihsing, Taihsien, Chintung (溱潼), Fanchuan (樊川), Kiangyen, Huangchiao (黃橋), Nantung, Jukao, Haian (海安), Paipu (白蒲), Chutang (曲塘).

Rice is produced in almost every district in Kiangsu. Although large quantities of rice are imported into Kiangsu districts from other places, it does not mean that Kiangsu is not self-sufficient in rice production. Many districts are the collecting and distributing centres of this staple item. Owing to presence of large number of flour and cotton mills, Wusih imports a considerable amount of wheat and cotton. Large amount of yarn is imported into Tungshan, Fenghsien, Tunghai and Sungkiang where textile industry is fairly developed.

Tsingpu, Wusih, Chinshan, etc. export tremendous amount of foodstuffs, while Tungshan, Tungtai, Taihsien, etc. turn out the largest portion of animals and animal products. Raw silk and cocoons are mostly exported from Wukiang, Liyang, Chintan, Chingkiang, Wuchin, Ihsing, Shanghai and Wusih, knitted and woven goods from Shanghai, Wusih, Wuchin, Nantung, Haimen, Kiangyin, Wukiang, Kiangning, Chinkiang, Wuhsien etc. The districts north of the Yangtse River are mostly salt exporting centres.

CHAPTER V

CURRENCY

THE *YUAN* (元), the national monetary unit, or as popularly called, the dollar, is now the currency used everywhere in the Kiangsu Province. The currencies circulating in the Province consist of dollars either in silver coins or in banknotes, silver and copper subsidiary coins, and taels. The tael is rather a weight of silver than a coin, and that in the form of ingots is of varying sizes and finenesses. With the introduction of the dollar, the silver ingots have rapidly losing its popularity as a circulating medium of exchange, and at present taels are still used only in Shanghai, Kiangning, Wuhsien and Chinkiang.

TAEL

Silver has been used as money for centuries, and not like the minting of copper and brass coins, the making of sycees was not a government monopoly but was left to anyone who had the silver. As a result, sycees vary extremely widely in sizes and finenesses, which condition has rendered the currency system in China a most complicated one. Even today, transactions are sometimes still settled with silver sycees or ingots, although this form of money is rapidly disappearing from circulation.

Silver sycees most widely used in Kiangsu Province are in four principal forms:

(1) *Yuanpao* silver (元寶銀), or *mati* silver (馬蹄銀), weighing about 50 taels, fineness varying in different localities.

(2) *Chungting* (中錠), or midium size ingot, weighing about ten taels, of different finenesses and shapes.

(3) *Hsiaoku* silver (小錁銀), or small ingots, weighing from 3 to 5 taels.

(4) *Tichu* (滴珠), or broken silver, used as small changes.

These silver sycees were very widely circulated during the Tsing Dynasty, but has been almost entirely melted down since the establishment of the Republic.

Tael being a weight of money rather than actual money, varies in different localities. The most widely used is the Shanghai tael, or the 98-tael, which is used in all larger transactions and in quoting foreign exchanges. Proposals have been made many times for the abolition of the tael, which is responsible for the complication of the Chinese monetary system, but so far very little has been accomplished. Detail plan has just now been drawn up by the Government, and it is scheduled to go into effect within a short time.

DOLLAR

Dollar is the national monetary standard, and will be the single unit when the tael is abolished and the new *yuan* is minted. At present, the Sun dollar and Yuan Shih Kai dollar are the most widely used.

The Sun dollar.—This dollar bears the image of late Dr. Sun Yat-sen, and is minted by the mints at Nanking and Hangchow. It was first minted in 1927, and the legal fineness has been strictly observed. The fineness, as it is required by law, is 890/1000 fine silver and 110 alloy metal, and a variation of 3/1000 in fineness is allowed. According to the examination of the Shanghai Bankers Association, the content of the Sun dollar minted by the Nanking Mint is 889.6 fine and that by the Hangchow Mint is 891.5, and according to the Native Banks Guild, the Sun dollar minted in the Nanking and Hangchow Mints is 889.5 and 891.0 respectively.

Yuan Shih Kai dollar—This dollar was first minted in 1914 by the Peiyang Mint in Tientsin, and later by the Nanking Mint. Before the appearance of this new coin, the market was full of "dragon" dollars minted during the later part of the Manchu dynasty by mints in various provinces, and the imported Mexican dollar. The new issue soon found favor among the people and not before long it had almost entirely taken over the place of the Mexican

and Manchu dollars. Mints in other provinces also engaged in the minting of the Yuan Shih Kai dollar, and especially large quantity was put out by the Hangchow mint. The dollar was favorably received in every part of the country, as there is no limit in locality in which it can circulate, as the dragon dollar. The fineness has been kept by different mintings although the weight varies slightly, as follows:

Minting	Weight	Fineness	Diameter	Thickness
Third Year	414.73	0.880	38.75	2.66
Eighth Year	413.37	0.880	38.75	2.66
Ninth Year	413.99	0.880	38.75	2.66
Tenth Year	414.66	0.880	38.75	2.50

Dragon dollar—The first dragon dollar was minted in 1889 in the Canton Mint when there were only the Mexican dollar and some foreign money in circulation. There are over a dozen varieties of dragon dollars, and the number minted amounted no less than 286 millions. Since the Yuan Shih Kai and the Sun dollars came into circulation, they have been gradually replaced, and today, only very few are found in the market. The following is a list of the different mints of the dragon dollars:

Mint	Year Issued	Weight (Kuping)	Silver content	Copper content
Kuangtung	Kuangsu	.7245	.6540	.0705
Hupeh	Kuangsu	.7226	.6530	.0696
Hupeh	Hsientung	.7261	.6547	.0714
Kiangnan	1898	.7243	.6538	.0705
Kiangnan	1902	.7074	.6386	.0688
Peiyang Machine Factory	1898	.7289	.6492	.0797
Peh Yang	1897	.7396	.6582	.0814
Fengtien Machine Factory	1899	.7247	.6207	.1040
Fengtien	1903	.7074	.5959	.1097
Three Eastern Provinces	1907	.7191	.6400	.0799
Kirin	1900	.6988	.6178	.0810
Kirin	1905	.6977	.6249	.0728
Szechuan	Kuangsu	.7179	.6437	.0742
Anhui	1898	.7229	.6477	.0762
Central	Kuangsu	.7209	.6521	.0688

Of the above-mentioned dragon dollars, the Kiangnan, Hupeh, and Kuangtung were current in Kiangsu, while other mintings were circulated at a slight discount.

Mexican dollar—This was once the most widely circulated medium of exchange, first invading China in the second half of the nineteenth century. It is at present very rarely found in the market.

SUBSIDIARY MONEY

Subsidiary currencies consist of three main categories, the silver 20-cent and 10-cent pieces, copper cents, and subsidiary notes.

Silver subsidiary coins—Most of the 20-cent silver pieces are imported from Canton where they are minted. Coins of Kiangnan, Hupeh and Peiyang minting are also found but only at rare occasions. Those from Fukien, the Three Eastern Provinces, etc. are accepted only at a discount. 10-cent pieces have been now almost entirely melted down.

Copper coins are the most important money among the mass of people especially in the interior cities and towns. Each copper cent is worth ten cash, which had already disappeared from circulation.

Subsidiary notes are issued by the Central Bank of China, Bank of China and Bank of Communications, in three denominations, 10, 20 and 50 cents. In places north of the Yangtse, notes are also issued in copper cents. Many native banks are issuing their own notes, which circulate in limited area.

BANKNOTES

Banknotes circulating in Kiangsu Province are issued by the Central Bank of China, the Bank of China, Bank of Communications, China and South Sea Bank, Ningpo Commercial Bank, Chekiang Industrial Bank, Commercial Bank of China, and National Industrial Bank, in

denominations of 1, 5, and 10 dollars. Notes of $50 and $100 are issued by some of the banks, but the amount in circulation is very small. The most popular and widely circulated notes are those issued by the Bank of China and Bank of Communications, which are not only accepted everywhere in the Province, but also in the Chekiang Province.

Foreign banks, like the Chartered Bank of India, Australia, and China, National City Bank of New York, Hongkong and Shanghai Banking Corporation, American Oriental Banking Corporation, the Mercantile Bank, and the Yokohama Specie Bank, also issue notes in all denominations, most of which, however, circulate only in Shanghai and do not find favor in the interior. Small amount of notes is also issued in taels.

MINTS

The first mint in this Province was established in Nanking in 1901, which turned out dragon dollars and subsidiary silver coins. After the establishment of the Republic, it began to strike the Yuan Shih Kai dollar in rather large quantities. The operation of this was not regular and was suspended from time to time owing to various reasons. Copper coins of enormous quantities were put out by this mint. During 1925 and 1926, the Nanking Mint devoted to the minting of silver dollars. There were two mints in Wuhsien opened in 1898 and 1904 respectively, which minted only copper coins. Both of them were closed in 1906. In Tsingkiangpu, a mint was established in 1905 for the coining of copper cents for circulation within the district. It had a capacity of over a million copper cents a day. This mint was closed down in 1907.

It was proposed in 1921 that a mint equipped with modern machinery and with a daily capacity of 500,000 coins be built in Shanghai, the need of such a project being urgently felt. This mint is to coin the national standard silver dollar. A loan of $2,500,000 was secured by the Ministry of Finance from the Shanghai bankers for the

purpose of purchasing land and erecting buildings. The project lay dormant until in 1928, when the resolution of the abolition of the tael was adopted in the economic and finance conference, and work was immediately renewed in putting plant in shape for early operation. Mr. Kwok Bew was appointed the director, and the Mint is renamed the Central Mint. This mint is situated at the end of Gordon Road, on the north bank of the Soochow Creek, and has three large storage rooms, two for silver bullion and the other for finished coins. With the abolition of the tael definitely decided, it is expected that the Mint will commence operation in the nearest future.

BOOK THREE

NANKING AND SHANGHAI

CHAPTER I

NANKING

NANKING, the seat of the National Government, has been the capital of many dynasties. The present name was originated in the Ming Dynasty, and before that it was variously called as Chinling (金陵), in the Chu (楚) Dynasty, Moling (秣陵) in the Chin (秦) Dynasty, Tanyang (丹陽) in the Han Dynasty, Chienyeh (建業) in the Wu (吳) Dynasty, and Kiangning (江甯) in the Chin (晉), Sui (隋), and Tang (唐) Dynasties. The city now is a special municipality.

Nanking was first made capital in the time of Prince Wu of the Han Dynasty about 220 A.D. After this it was the seat of government many times, but the zenith of its wealth and glory was reached only when the first and the greatest of Mings made it his capital in 1368. He built the imperial city walls and his palace, and after he died, his remains were buried in the Ming Tombs outside the Chaoyang Men (朝陽門). During the revolution of 1911, Nanking was the scene of fighting, which led to the fall of the Manchu Dynasty and the foundation of the Republic. In 1912, Dr. Sun Yat-sen was succeeded by Yuan Shih-kai as president, and the capital was removed to Peking (now Peiping). Since then, for about 15 years, this historical city had been the capital of the Kiangsu Province until the establishment of the National Government in 1927, which once more made Nanking the Chinese National capital.

LOCATION, TOPOGRAPHY, AND SOIL

Nanking is situated on the south bank of the Yangtse River about 400 kilometers above its junction with the Whangpoo and one kilometer from Pukow across the Yangtse. Shanghai can be reached by rail for a distance of 310 kilometers. It is politically important as well as

from a military point of view, with hills as Sssutsushan (狮子山), Wulung (乌龍), Yuhuatai (雨花台), and other hills strategically situated about the city. The city is from five to fifteen feet above the sea level, being slightly sloping toward the south with small hills at the west and the north ends, the highest peaks being 85 meters. Outside the city however, it is very hilly, with risings as high as 240 meters. On the northern part is a mountain range, the most famous peak being the Laohushan (老虎山) of 180 meters high. The suburbs of Pukow as well as large tracts of land on both banks of the Yangtse are especially low and marshy and easily flooded in summer.

Nanking is well provided with facilities of water transportation. Here the Yangtse River comes from southwest, running in a zigzag way to empty itself into the China Sea. The Chinhuai River (秦淮河) traverses the southern part of the city while the Huiming (惠明河) River crosses the northwest. There is a moat surrounding the city wall over a long circuit. In addition, there are a number of lakes, such as the Hsuenwu Lake (玄武湖) and the Mochou Lake (莫愁湖), which are famous for their scenic beauty.

The soil of Nanking is of two kinds, alluvium and fertile soil, the later being found in the city proper and its northwestern suburbs. The hills around the city are mostly of hard and fragile rocks, composed of quartz, sand stones etc., little lime stone being traced. The stratum runs east and westward.

COMMUNICATIONS AND TRANSPORTATION

Nanking is well served with means of transportation and communications both by water and overland. The distance from Nanking to many other important cities in China is as follows:

To	Route	Kilometers	Miles
Shanghai	Nanking-Shanghai Railway ..	301.63	193.02
	Yangtse	376.16	203.00*
Wusih	Nanking-Shanghai Railway ..	185.26	113.22*
Wuhsien	Nanking-Shanghai Railway ..	224.57	139.55*
Chinkiang	Nanking-Shanghai Railway ..	68.68	42.68
	Yangtse	87.10	47.00*
Pengpu	Tientsing-Pukow Railway	174.60	108.50

Taian	Tientsin-Pukow Railway	588.27	365.55
Tsinan	Tientsin-Pukow Railway	660.77	410.60
Wuhu	Yangtse	101.92	55.00*
Kiukiang	Yangtse	468.81	253.00*
Hankow	Yangtse	728.23	393.00*
Ningpo	Nanking-Shanghai Railway and Shanghai-Hangchow-Ningpo Railway	613.14	381.00
Nanchang	Nanchang-Kuikiang Railway via Kiukiang	509.34	316.50
Haichow	Tientsin-Pukow Railway and Lung-Hai Railway	494.05	307.00
Kaifeng	Tientsin-Pukow Railway and Lung-Hai Railway	617.16	383.50
Kueiteh	Tientsin-Pukow Railway and Lung-Hai Railway	485.20	301.50
Chengchow	Tientsin-Pukow Railway and Lung-Hai Railway	682.54	424.00
Tsining	Tientsin-Pukow Railway	480.37	298.50
Changchow	Nanking-Shanghai Railway ...	143.35	89.08
Kiangyin	Yangtse	200.12	108.00*
	Tientsin-Pukow Railway via Changchow	305.77	109.00
Kiangtu	Nanking-Shanghai Railway and Highway via Chinkiang ..	95.49	59.34
Ihsing	Nanking-Hangchow Highway..	140.81	87.50
Hsuchow	Tientsin-Pukow Railway	339.56	211.00

To go abroad from Nanking, one must pass Shanghai, and the distances to various places of the world are as follows:

Nanking to	Kilometers	Nautical Miles	
Singapore	4,625.09	2,496	
Seattle	9,751.60	5,268	
San Francisco ...	10,550.98	5,694	
New York	23,362.62	12,608	
New York	20,173.61	10,887	Via Panama Canal
London	19,908.63	10,744	
Liverpool	19,840.01	10,707	

Passengers for Nanking who arrive by the Nanking-Shanghai Railway or by vessel disembark at Hsiakuan, with which place Nanking is connected by the Nanking City Railway, 8 miles in length, with hourly train service. Highways radiating from the capital are nine, as follows:

*Knots.

1. Shui Hsi Men (水西門) to Hsin Ho Chen (新河鎮)—Running in a westward direction from Nanking, eight *li* in length.

2. Chung Hua Men (中華門) to Pan Chiao Chen (板橋鎮)—Rock surface, 90 *li* long, straight but narrow, leading to Wuhu.

3. Chung Hua Men to Ho Chia Tsun (何家村)—Running southward from city gate.

4. Chung Hua Men to Mo Ling Kuan (秣陵關) via Yin Chia Chen (殷家鎮), 50 *li* long, not suitable for automobiles.

5. Tung Chi Men (通濟門) to Chuyung via Shang Fang Chen (上方鎮)—Southeastward from the city gate, 90 *li* in length, not open to automobiles and carriages.

6. Kuang Hua Men (光華門) to Pailou (牌樓)—Eastward, 8 *li* long, not suitable for carriage or motor car trip.

7. Chung Shan Men (中山門) to Tangshan (湯山)—50 *li* long, running eastward from the city gate, good motor road.

8. Taiping Men (太平門) to Chinkiang via Yao Hua Men (堯化門)—150 *li* in length, not available for motor cars.

9. Hsiakuan to Yen Tsu Chi (燕子磯)—Northeastward from the city, 15 *li* in length, good for motor cars.

In addition to the above nine, there is also the famous Nanking-Hangchow National Highway, particulars of which are given in a separate chapter on highways.

POPULATION

Although Nanking is to-day teeming with life and is one of the important cities in the world politically, it was 20 years ago a dead and impoverished city of a population of only 269,000. The population has been growing rapidly since the establishment of the National Government, as shown by the following statistics from the Customs:

Year	Population	Year	Population
1912	269,000	1922	380,900
1913	269,000	1923	401,500
1914	377,120	1924	395,500
1915	368,800	1925	395,900
1916	378,200	1926	395,900
1917	377,549	1927	360,500
1918	376,291	1928	497,500
1919	392,100	1929	522,696
1920	392,100	1930	561,443
1921	380,200	1931	633,452

According to the census just taken, the city had a population last June of 613,185, rising in August to 621,864, including 377,276 males and 244,588 females, from a total of 121,718 families. Apparently, then, the growth of the population in Nanking has been very slow, and there is every reason to believe that at the end of this century, the figures will increase at least threefold as a result of development of the city.

PORT DEVELOPMENT

In order that a great world port may be successfully developed in a given locality, there are certain elements which must either exist or be possible of economic achievement. First of all, channel depths must be possible for vessels of ocean-going craft. Railroad facilities are essential for the linking up of the ocean carrier with distant inland points. Highways are needed for the fast economical transfer of freight between the port and nearby territories. Nanking fulfills very well all these requirements. It is already provided with a channel depth sufficient at high water to pass ships of considerable tonnage. As the amount of shipping increases to a point where it is sound economics to do so, this channel can be easily dredged across the Lang Shan flats (狼山灘), its only shallow spot, to permit the passage of ocean-going craft at all stages of tide. Once over the Lang Shan flats there is a channel depth far in excess of the needs of the world's largest ships, and at Nanking itself there is a depth which varies between 50—160 feet within the upper and lower anchorage. The river is well over a mile wide at both anchorage limits, and at the narrowest point (3,500 ft.) the current speed seldom exceeds five knots even during highest tide. There is thus provided ample space for the safe manoeuvering of very large vessels. The great depth of water has the additional advantage of insuring unusually smooth water in heavy winds.

In addition to waterways, Nanking is at the present time the terminus of two great trunk-line railroads—the Tientsin-Pukow, with its terminal on the north bank of

the Yangtse at Pukow, and the Nanking-Shanghai line, terminating in Hsia-kuan (下關) on the south bank. The completion of the projected line to Canton and the south will make Nanking the most important railroad center in China. These three railroads will link the capital with a very large area not reached by river transport, and the operation of through trains between Peiping, Shanghai and Canton will be accomplished at a minimum cost by means of train ferry across the Yangtse. Projected highways radiating from Nanking will make the port facilities available to large areas by means of motor transport. The three systems of transportation will bring the products of industry and agriculture of one hundred million people into the port from the enormous hinterland that they will tap. Through the port vast foreign markets will become available for the economic and industrial development of a very large section of China. The same railroads, river boats, and highways will also take from the port those products of foreign countries and other sections of China that may be needed to supplement the natural resources and industry of the section served.

COMMERCE

Though Nanking is a center more political than commercial, there is high possibilities of rapid development in commerce, with the National Government now being established here. Among other trades, lumber business is especially prosperous, value of annual import amounting to about five or six million taels, of which about 60 per cent is consumed in Nanking and 40 per cent conveyed to other points. The rapidly increasing population creates a growing demand for industrial articles and building materials. Exports from Nanking consist mainly of Nanking silk piece goods, which, however, have suffered a slump in the last two or three years.

The balance of trade of Nanking has always been unfavourable, as shown in the following table:

	Imports from		Exports to		Total	Re-exports
	Abroad	Other Ports	Abroad	Other Ports		
1922	8,562,794	17,545,497	3,306,004	12,400,555	41,814,850	821,306
1923	3,845,613	15,847,680	3,697,280	14,544,973	37,935,546	757,324
1924	3,968,058	15,692,719	2,485,065	15,452,355	37,598,197	594,515
1925	4,347,052	15,877,622	3,042,078	16,450,162	39,716,914	1,575,411
1926	4,324,808	19,515,535	5,356,947	16,728,193	45,925,483	939,941
1927	941,452	6,264,920	101,395	5,018,044	12,325,811	268,976
1928	1,049,206	11,190,592	2,767,636	5,568,383	20,575,817	277,688
1929	5,321,079	19,528,581	3,711,121	5,765,636	34,326,417	501,640
1930	8,919,385	16,011,415	3,542,955	4,832,555	33,306,310	854,834
1931	10,442,811	13,329,549	345,945	3,975,051	28,093,365	439,676

A point worth notice is the rapid increase in the direct imports from foreign ports since the establishment of the Government in 1927. Large quantities of lumber are being imported from America and Vladivostock, railway materials, locomotives, and other heavy materials from France and Belgium, coal from Japan, etc.

In addition to the goods in foreign bottoms reported by the Maritime Customs, the railways carry a large volume of business. The principal articles sent out from Nanking by rail were eggs and egg products, rice, wheat, beans, cocoons, cotton, sesame, groundnuts and live stocks, aggregating two or three hundred thousand tons annually. Imports into Nanking are cotton yarn, piece goods, sugar, paper, hardwares, building materials and other manufactured and consumption goods. Goods arriving by sailboats and junks and landed at points beyond the Customs' sphere are not included in the above table.

INDUSTRIES

The principal industry of Nanking is the manufacture of fine silk piece goods, pongee, satins, velvets and brocades, for which the city has been noted for hundreds of years. Only about a decade ago, the annual export of silk fabrics from Nanking totalled invariably above $10,000,000. During recent years, however, owing to the extensive use of Western fabrics by people in many large commercial ports and interior cities, a marked decline has been shown in the industry, and the value of annual exports has shrinked correspondingly to less than $2,000,000, with Mongolia, Liaoning, Harbin, Tientsin and Szechwan the only existing markets.

Less important than textile manufacture is the brick-making industry and poultry farming. Bricks are made of the alluvium on the banks of the Yangtse river, while egg factories and incubation houses are found in large numbers in Hsiakuan. According to the statistics compiled by the Bureau of Social Affairs of the Nanking Municipality, Nanking is now a city of about 30 factories, having a total capital of $1,280,100, distributed as follows:

	No. of firms	Total Capital
Textile factories	3	$ 86,000
Brick factories	2	12,000
Flour mills	2	620,000
Silver smiths	2	87,000
Printers	13	340,900
Foundries	4	9,200
Others	4	125,000
		$1,280,100

A new project has been set on foot by the Ministry of Industry to establish in the capital an alcohol factory, which, considering its large capital and gigantic scheme, will be the largest and the most modern factory in Nanking.

FINANCE

As Nanking is far from being an important industrial and commercial center, it had, prior to 1926, only four banks, namely, the Bank of China, the Bank of Communications, the Kiangsu Bank and the Shanghai Commercial and Savings Bank. After the establishment of the National Government in the city, however, the number of banks increased by leaps and bounds until at present, there are more than 20 modern and 30 native banks in operation, absorbing a total deposit of about $60,000,000, 20 per cent of which is loaned to the Government while the remainder is invested in different channels, including deposit with banks, call loans, collection of foreign bills, purchase of bonds, etc.

CHAPTER II

SHANGHAI

GEOGRAPHY AND CLIMATE

SHANGHAI lies in latitude 31° 11′ 32 6/16″ N., and longitude 121° 25′ 45″ E., and is situated within a few miles of the mouth of the Yangtse River, one of the largest navigable rivers in the world, on the banks of the tributary river Whangpoo, and protected by its position against serious danger against typhoons. It is eminently suitable as the distributing port for the commerce of the rich and densely populated basin of that great river, which spreads westward across the whole width of China. In the delta of the Yangtse an area of nearly 50,000 square miles supports a population of over 40,000,000 people which is directly dependent on Shanghai, and the area in the whole watershed of 750,000 square miles with a population of 180,000,000 people, owing to natural barriers, is and must remain the hinterland of the estuary port.

The climate of Shanghai is of oceanic in nature, and it may be described in the following four tables:

I. TEMPERATURE (Centigrade)

	Degrees
Average Annual Temperature (1873-1930)	15.12
Average Monthly Highest Temperature (July) ...	36.81
Average Monthly Lowest Temperature (January) ..	6.81
Average Annual Highest Temperature	37.29
Average Annual Lowest Temperature	7.70

II. HUMIDITY

	Degrees
Average Annual Absolute Humidity (1873-1930) ...	158.1
Average Annual Relative Humidity (1873-1930) ...	80.2
Average Monthly Highest Humidity (June)	84.2
Average Monthly Lowest Humidity (December)	76.3

III. RAINFALL (1873-1930 Average)

January	49.9 mm	August	145.7 mm
February	57.9 „	September	123.9 „
March	86.2 „	November	50.4 „
April	91.6 „	October	74.5 „
May	90.5 „	December	35.6 „
June	184.8 „		
July	148.2 „	Total	1,139.2 „

IV. WIND DIRECTION (1873-1930 Average)

January	NW	13.7°	August	NE	108.7°
February ...	NE	10.0°	September ..	NE	48.6°
March	NE	57.4°	October	NE	29.3°
April	NE	102.1°	November ...	NW	10.0°
May	NE	124.5°	December ...	NW	22.1°
June	NE	126.4°			
July	NE	140.2°	Average ..	NE	70.7°

HISTORICAL BACKGROUND

Shanghai, from the historical point of view, is insignificant as compared with other large Chinese cities. Being situated on delta land formed in ancient days by the silt from the Yangtse River, it had its humble beginning merely as a fishing village. In earlier times, it had been known under varying names, and it was not until the Sung Dynasty (960-1127 A.D.), that the name of Shanghai has established itself, and then, in 1075 A.D., it was known as Shanghai-Chin, or Shanghai market. For more than two centuries after it was made a *hsien* in 1264 A.D., it remained unwalled. It was not until 1554, during the Ming Dynasty (1368-1644 A.D.), that permission was given to enclose it with a wall, on account of the depredations of Japanese pirates. This wall, from 20 to 24 feet in height and three and three quarter miles long, was later removed after the Revolution of 1911.

The first visit to Shanghai by foreign merchants was made in 1832, when the East India Company despatched the ship "Lord Amherst" from Macao on a commercial mission in charge of Mr. Hugh Hamilton Lindsay with the Rev. Charles Gutzlaff as interpreter. After failing to gain admittance into Amoy, Foochow, and Ningpo, he proceeded to Shanghai, where he was again rejected. Then came the

first war between China and Great Britain in 1840-1843. After the capture of Amoy, Ningpo, and Chapoo by the British forces, Woosung, the outer gate of Shanghai, was finally taken on June 16, 1842. The city of Shanghai was occupied on the 19th, and evacuated on the 23rd. The expedition forces passed on up the Yangtse River until they arrived on August 9, 1842. The occupation of the Yangtse resulted in the signing of the Treaty of Nanking on August 29, 1842. It was under the provisions of this treaty that Shanghai, together with Canton, Amoy, Foochow and Ningpo, was declared on November 14, 1843, opened to foreign trade.

ORIGIN AND DEVELOPMENT OF FOREIGN SETTLEMENTS

After the opening of the port, an arrangement was soon reached between the Taotai (Intendant of Circuit and Superintendent of Customs), Kung Moo-yun, and the British Consul, Captain G. Balfour, for a site for the English merchants for erecting their buildings and residing upon. On November 29, 1845, this agreement was made public in the form of an announcement, known as the first Land Regulations, promulgated jointly by the Taotai and the British Consul. This area, which was a marshy district situated on the bank of the Whangpoo River, was then commonly known as the British Settlement, and marked the first of the foreign settlements in Shanghai. The eastern boundary of the Settlement was the Whangpoo River; the southern, the Yangkingpang Creek; the northern, Le Kea Chang, a Chinese estate with its boundary correspond with the line of the present Peking Road; and the western, which was not determined until a further agreement entered into between the British Consul and the Taotai on September 24, 1846, and fixed the boundary at Barrier Road, now Honan Road. The original area of the Settlement as thus defined was about 830 *mou*, equivalent to 138 acres.

On November 27, 1848, a further agreement was made between the British Consul and the Taotai that the western boundary of the Settlement be advanced inland as far as Defence Creek, the line of which is now marked by Thibet Road, and the extent of the area was thus increased to

2,820 *mou* or 470 acres. At that time the Settlement appeared to have had a population of something over 100 foreigners, including representatives of 24 mercantile firms, of which three were American and the remainder British. In 1849 the total number of the foreign population was given as 175, and by 1855 it increased to 243.

On April 6, 1849, the boundaries of French Settlement were defined as from south of the Yangkingpang Creek to the north of the walled city, and on the east the river side from Canton Guild to the Yangkingpang, and on the west from the Kuantimiao Creek to the bridge of the Chow family. In 1853, an American Settlement had begun to grow up on the north side of the Soochow Creek, and on the bank of Whangpoo to the east of the British Settlement. This area, which then amounted to 7,856 *mou* (1,309 acres), was finally amalgamated with the British Settlement in 1863 and known as the International Settlement.

The area of the International Settlement was again extended in 1899 by the addition of an area of 11,377 *mou* (1,896 acres) to the north of the Settlement, and 11,450 *mou* (1,908 acres) to the west, making the total area 33,503 *mou* equivalent to 5,584 acres, or 8 2/3 square miles. Simultaneously the French Concession was also largely increased in the direction of Siccawei, and at the outbreak of the World War in 1914, the French had again succeeded in obtaining a considerable extension, taking in the land enclosed by the roads they had constructed.

THE MUNICIPALITY OF GREATER SHANGHAI

Not more than six years ago Chinese governed territories in Shanghai—Chapei, Nantao and Woosung—were administered under three separate authorities. It was not until 1926, when the Sung Hu Tu Pan Office (淞滬督辦公署) was organized by the order of Marshal Sun Chuan-fang, the then Governor of the five south-eastern provinces, the three territories were finally brought together and placed under the control of a single authority. But this organization experienced a short life only. It was abolished in 1927 when the National Government was established, and a Municipal Government was established in its stead in July 7 of the same year.

The Municipal Government, which functions under the direct control of the Executive Yuan of the Central Government without the intervention of any provincial authority, was at first composed of a Secretariat and nine Bureaux, namely, Finance, Public Safety, Public Works, Public Health, Public Utility, Education, Land, Agriculture, Industry and Commerce, and Benevolence. The Bureau of Benevolence was abolished at the end of September of the same year, and the Bureau of Agriculture, Industry, and Commerce was re-named as the Bureau of Social Affairs since August 1, 1928. On December 25 of the same year, a new administrative organ was established and known as the Bureau of Harbor Administration, which however was abolished in December, 1930. The present system of the Municipal Government of Greater Shanghai, therefore, consists of a Secretariat, and eight bureaux of Social Affairs, Public Safety, Finance, Public Works, Education, Public Health, Land, and Public Utility.

Except the entire district formerly under the administration of the Shanghai *Hsien*, the limits of the Municipality was originally fixed to consist of Woosung, Kaochiao (高橋), Yinhang (殷行), Kiangwan, Pengpu (彭浦), Chenju (眞茹), Tachang (大場) and Yanghang (楊行) of the Paoshan *Hsien* (寶山); a part of Chipaohsiang (七寶鄉) of the Sungkiang and Tsingpu *Hsien*; a part of Hsinchuang (莘莊) of the Sunkiang *Hsien*; and a part of Choupuhsiang (周浦鄉) of the Nanhui *Hsien*. The total number of towns and villages embraced is 30, and the total area covered is over 1,100,000 *mou*, with about 70 *li* long from east to west, and over 100 *li* long from south to north. But owing to some difficulties the absorption of several of the above districts being temporarily suspended. Consequently, the present limits of the Municipality consists of Nantao (including the Native City), Pusung (蒲淞), Fahua (法華), Chaohoching (滬河涇), Yinhsiang (引翔), Kaohang (高行), Luhang (陸行), Tangchiao (塘橋), Yangssu (楊思), Woosung, Kiangwan, Yinhang, Pengpu, Chenju, Kaochiao, Chapei, and Yangching (洋涇). For the sake of uniformity, all these villages and towns being named as *chu* (區) or district, and except

Nantao, Chapei, Yangchin and Yinhsiang, each of these districts is administered by a Municipal Committee known as Shi Cheng Wei Yuan Pan Shi Chu (市政委員辦事處) which is under the direct auspices of the Municipal Government.

In view of the tremendous increase of population and trade, the municipal authorities have devised plans for the building of a new city. The City Planning Commission was organized in 1929, and after almost two years of comparative study with technical advisors, the Commission evolved a detailed program for the building of a new Shanghai, work on which has been started. The site chosen for this great project is the Kiangwan district, conveniently located between Woosung and the International Settlement. It reaches the Whangpoo River on the east and the Shanghai-Woosung Railway on the west. The entire site comprises well over 100,000 *mou* of level ground. The Civic Center, occupying approximately 3,000 *mou* and centrally located, will be an example of "Chinese Renaissance" architecture. It will rise at the intersection of two principal thoroughfares, with the Mayor's building placed in the center flanked by eight bureaux. Besides, it will be embellished with gardens, monuments, pools, fountains, bridges, and the like, the whole to form, with the future courthouses, museums, art galleries, auditorium and post-offices, a monumental and beautiful ensemble.

In addition to the Civic Center, the City Planning Commission has allocated districts for residential, industrial, commercial, and educational uses. Considerable attention is being given to development of the harbor, and wharves, warehouses and water-frontage will be built according to the most modern designs. Other projects including the construction of a bridge accross the Whangpoo River, the building of a network of streets, a complete and well distributed system of parks and open spaces are also contemplated by the City Planning Commission. So when this gigantic plan is carried out Shanghai will be one of the world's most completely modernized ports.

DIFFERENT ADMINISTRATIVE AREAS

From the above narratives, the Shanghai of to-day, therefore, consists of three areas administered by three separate and mutually independent authorities, each acting

under its own special laws and regulations. The three areas are: the First Special District or the International Settlement, administered by an elected Municipal Council, including foreign and Chinese representatives, subject in certain respects to the control of an annual meeting of foreign ratepayers; the Second Special District or the French Concession, administered by the French Consul-General, with the assistance of an advisory body consisting partly of appointed foreign members, and partly of Chinese members chosen by Chinese organizations; and the Chinese area, administered by the Chinese Municipal Government, consisting of a Mayor appointed by the Central Government, and the chiefs of a number of administrative bureaux, similarly appointed on the Mayor's recommendation.

Besides, there are two areas one lies to the west and the other to the north of the International Settlement known as "External Roads Areas." These areas came into existence when the Municipal Council of the International Settlement has constructed roads and other public works outside the limits of the Settlement, and thus exercises partial control in the district. The right of Council to exercise partial control in these "External Roads Areas" is denied by the Chinese Municipal Government, so in fact, both authorities are at present exercising certain powers within these areas.

Economically speaking, each of the three areas has its own characteristics. The International Settlement is the center of foreign investment and thus includes the central business area and most of the modern factories. The French Concession, as well as the western section of the International Settlement, is the residential district for well-to-do classes. In the Chinese areas, Chapei may be called the industrial district, where a number of modern factories are situated, Nantao is a busy shipping center for inland trade, while the outlying districts such as Woosung, Chenju, Kiangwan, Pootung, etc., are rural and agricultural in character, and are mainly inhabited by peasants.

COMMUNICATIONS

Situated on the easternmost central point of the Chinese sea-board, Shanghai also enjoys an extraordinary favorable position on the world map. It is about equidistant in shipping time from both Western Europe and the Eastern United States, which are the world's most developed industrial centers. India, Siberia, the East Indies, Australia, Japan and the Western states of America are all in fairly direct ocean connection with Shanghai. Therefore, undoubtedly speaking, Shanghai, with its favorable geographical position, serves not only as the commercial gateway of China but also a potential field of supply and demand of the world.

As to coastal shipping, steamers are plying with a definite schedule southerly to Canton, Soochow, Wenchow and Amoy, and northerly to Tsingtao, Tientsin, Chefoo, Newchwang and Dairen. To Central China, the Yangtse River provides an excellent fairway. Hankow, 600 miles from Shanghai, is accessible at all times for steamers of 2,000 tons, and, during the summer months, for vessels up to 8,000 or even 10,000 tons. Above Hankow the river is navigable in the summer by special vessels for another 800 miles, and the large tributaries are mostly navigable by junks and small steamers for 100 or more miles from the main stream. With the numerous creeks and canals present, nearly all the inland cities surrounding Shanghai like Wuhsien, Huchow, Kiangtu, etc., can be easily reached by steam launches. As to land transportation, both the Nanking-Shanghai and the Shanghai-Hangchow-Ningpo Railways have their starting points in Shanghai. With the success of through traffic arrangements with the Tientsin-Pukow Railway, one can travel directly from Shanghai to as far north as Peiping in 34 hours.

The following table shows the various distance, in nautical miles, from Shanghai to different ports:

North China:	
Tsingtao	400
Chefoo	520
Newchwang	700
Weihaiwei	480
Dairen	560
Tientsin	730

South China:	
Ningpo	136
Foochow	440
Swatow	730
Wenchow	344
Amoy	600
Hongkong	850
Kwangchowwan	1,083
Annam:	
Haiphong	1,335
Saigon	1,780
East Indies	
Manila	1,493
Singapore	2,293
Batavia	2,825
Penang	2,600
Siam:	
Rangoon	3,330
Korea:	
Chemulpo	503
Gensan	784
Formosa:	
Tamsui	453
Japan:	
Nagasaki	450
Kobe	760
Moji	550
Yokohama	1,100
Siberia:	
Vladivostock	1,000
India:	
Colombo	3,900
Calcutta	4,067
Madras	4,450
Karachi	5,236
Bombay	4,753
Arabia:	
Aden	6,000
Africa:	
Zanzibar	6,476
Alexandria	7,600
Cape Town	8,320
Australia:	
Brisbane	4,955
Sidney	5,429
Melbourne	6,005
Auckland	6,693

Europe	
Athens	7,963
Constantinople	8,084
Brindisi	8,218
Odessa	8,248
Genoa	8,739
Marseilles	8,800
Barcelona	8,888
Gibraltar	9,199
Plymouth	10,245
Cherbourg	10,330
Suthampton	10,342
Liverpool	10,504
London	10,541
Antwerp	10,721
Rotterdam	10,746
Hamburg	10,968
Oslo	11,100
Bergen	11,147
Gothenburg	11,120
Copenhagen	11,252
Leningrad	11,823
South Sea Islands:	
Honolulu	4,409
Suva	5,385
America (East Coast):	
Seattle	5,289
Victoria	5,230
San Francisco	5,491
Los Angles	5,673
Panama	9,120
Valparaiso	11,149
America (East Coast):	
New York	12,405* or 10,684†
New Orleans	13,650* or 9,998†
Trinidad	12,530* or 9,820†
Quebec	12,177* or 11,720†
Havana	13,165* or 9,699†
Rio Janeiro	14,450* or 13,670†

*Via Suez Canal
†Via Panama Canal

The number of vessels entered and sailed from the Shanghai port during the past 10 years ending 1931, together with their tonnage, are tabulated as follows:

	Ocean Liners		River Steamers		Foreign Type Sailing Vessels		Steam Launches and Tugged Boats		Junks		Total	
	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons
1922	10,117	22,162,812	2,881	4,759,091	1,082	191,314	2,611	296,945	4,982	105,765	21,673	27,515,927
1923	10,871	24,726,243	2,845	4,690,237	1,124	203,961	2,571	281,879	5,465	116,020	22,876	30,018,240
1924	11,652	26,795,721	3,161	5,083,224	922	178,732	1,891	186,894	2,869	60,848	20,495	32,305,419
1925	11,038	25,254,534	2,886	4,599,268	890	183,494	1,854	179,771	3,193	67,788	19,861	30,284,855
1926	11,610	27,546,798	3,484	5,328,890	773	166,255	1,985	178,843	4,834	102,643	22,686	33,323,429
1927	10,980	26,343,466	2,596	3,350,017	834	186,415	1,839	159,990	5,265	111,765	22,514	30,151,653
1928	11,717	27,908,661	4,276	6,206,818	905	213,998	2,208	189,810	3,162	67,119	22,268	34,586,406
1929	12,236	29,380,904	3,918	5,534,662	928	22,421	2,357	182,075	2,850	60,498	22,289	35,869,560
1930	12,926	31,160,619	3,876	5,476,617	945	211,559	2,293	185,345	3,699	76,501	23,739	37,110,641
1931	13,310	32,465,345	3,781	5,141,320	943	208,065	1,694	135,592	1,067	22,671	20,795	37,972,893

The table showing the number of passengers and tons of freight transported by the Nanking-Shanghai and Shanghai-Hangchow-Ningpo Railways, together with their receipts, during the past 24 years ending 1929, follow:

	No. of Passengers		Tons of Freight		Receipts	
	N. S. R.	S. H. N. R.	N. S. R.	S. H. N. R.	N. S. R.	S. H. N. R.
1905	2,692,240	1,845,885	839,826	467,748	$3,418,058.75	$1,914,242.49
1910	8,198,724	5,743,286	1,398,552	585,070	6,204,604.20	2,959,880.31
1921	8,754,664	5,210,003	1,321,160	650,220	6,920,811.76	3,258,689.38
1922	10,449,945	6,050,894	1,458,841	782,211	7,572,528.68	3,663,009.12
1923	11,035,397	6,160,018	1,613,773	870,728	8,521,653.91	4,332,807.63
1924	9,655,063	5,430,380	1,300,101	639,995	8,800,858.27	4,287,352.32
1925	8,863,989	5,173,625	1,046,004	823,403	8,843,692.67	4,429,232.34
1926	11,313,102	5,450,612	1,532,315	879,966	9,175,252.39	4,978,625.88
1927	8,657,304	3,885,704	748,600	543,598	8,134,199.38	4,646,426.26
1928	10,861,405	5,207,158	1,296,223	889,656	10,876,083.45	5,622,075.12
1929	11,708,039	5,341,510	1,447,680	901,845	12,039,881.90	5,927,315.14

Shanghai is also proud of its intra-city communications. The following table shows the length of streets in the various districts of the city:

*Municipality of Greater Shanghai (1930)	235,313	meters
International Settlement (1930)	175.964	miles
French Concession (1929)	58.000	miles
†Suburban highways	307	*li*

AREA AND POPULATION

The area of Shanghai, taking all the International Settlement, the French Concession, and the Chinese areas, is 1,236,400 *mou* or 332.60 square miles, of which the International Settlement covers an area of 33,503 *mou* or 8 2/3 square miles, the French Concession, 15,150 *mou* or 3.94 square miles, and the Chinese areas, 1,187,747 *mou* or 320 square miles.

Boasting as the largest city in the Far East and sixth largest city in the world, Shanghai has a population of over 3,000,000. But before the city being opened as a port, the population was only about 75,000, and since then, it increased with a great velocity as shown in the following table:

	International Settlement	French Concession	Chinese Areas	Total
1865	92,884	——	——	——
1870	76,713	——	——	——
1876	97,335	——	——	——
1880	110,009	——	——	——
1885	129,338	——	——	——
1890	171,950	——	——	——
1895	245,679	52,188	——	——
1900	352,050	92,263	——	——
1905	464,213	96,963	——	——

*Including Nantao, Chapei, Chungshan, Yinghsiang, and Yangchin districts.

†Including Shanghai-Nanhui-Choupu, Shanghai-Chuansha, Shanghai-Liuho, Shanghai-Minhong, and Shanghai-Woosung-Paoshan roads.

1910	501,541	115,946	568,372	1,185,859
1915	638,920	149,000	——	——
1920	783,146	170,229	——	——
1925	840,226	297,072	——	——
1930	1,007,868	434,807	1,699,575	3,112,250

Based on the latest census returns taken by the authorities of the Municipality of Greater Shanghai, the International Settlement and the French Concession, the number of residents, both Chinese and foreign, within the limits of this great commercial center is 3,141,490. Of this total Chinese residents number 3,079,374 and foreign 62,116. The detailed figures are tabulated as follows:

GRAND TOTAL

3,141,490

Municipality of Greater Shanghai (1)		International Settlement (2)		French Concession (3)	
1,655,070		1,007,868		478,552	
Chinese	Foreign	Chinese	Foreign	Chinese	Foreign
1,645,635	9,435	971,397	36,471	462,342	16,210
917,511 Males	908,121 Females	437,300 Males	280,709 Females	417,839 Permanent	15,462 Permanent
		253,388 Children	8,031 Children	24,178 Temporary	748 Temporary
			15,801 Males	20,325 River Population	
			11,739 Females		

(1) For the month of December, 1932.

(2) Taken on October 22, 1930.

(3) Taken on September 20, 1932.

Shanghai is indeed a cosmopolitan city. Among its foreign residents no less than 50 nationalities are represented. The nation most strongly represented is the Japanese, nearly all of whom live either in the International Settlement or in the northern External Road Area. The British form the next most numerous section, the Russians come third, and the Americans, fourth. As to the composition of the Chinese population in Shanghai, 25 of the 28 provinces of the Republic are represented by the residents in this city. Kiangsu, the province in which Shanghai is situated provides more than half of the total, while the neighboring province of Chekiang provides about one-third.

ECONOMIC POSITIONS

Shanghai is not only the largest city in China, but also the economic center of the country, as the economic activities of all other ports are affected, either directly or indirectly, by the market conditions of Shanghai. In short, the economic conditions of Shanghai may be analyzed as follows:—

1. As a trading center.—Shanghai is the largest port handling the country's foreign trade, and it is also the chief collection and distributing center for internal trade. Goods from the interior destined for foreign and outside markets are all transhipped at Shanghai, and the majority of foreign goods imported into the interior is also distributed through Shanghai. From this we can imagine what an important position which Shanghai occupies in both the foreign and domestic trade of the country. The following is a comparative table showing the volume of import and export trade handled by China's five leading ports during 1931:—

	Net Foreign Imports (Hk. Tls.)	Net Chinese Imports (Hk. Tls.)	Exports (Hk. Tls.)	Total (Hk. Tls.)
Shanghai	639,411,012	167,412,180	537,980,298	1,344,803,490
Dairen	104,515,551	29,294,931	270,473,083	404,283,565
Tientsin	134,702,697	82,563,190	132,964,050	350,229,937
Canton	62,506,967	104,222,436	76,502,301	243,231,704
Tsingtao	75,041,663	37,375,776	105,857,748	218,275,187
Total (including all ports)	1,420,366,791	816,326.941	1,698,744,423	3,119,111,214

The percentage of Shanghai's trade as compared with that of the whole country (100) during the past 12 years follow:

1921	.....	36.46	1927	.....	37.34
1922	.....	36.94	1928	.....	40.88
1923	.....	37.64	1929	.....	45.44
1924	.....	39.58	1930	.....	47.97
1925	.....	37.16	1931	.....	50.65
1926	.....	41.81	1932	.....	42.99

2. As an industrial center.—Since 1890 when the first large manufacturing plant using modern machinery driven by electric power was established, there has been a tremendous progress in the development of modern industry in Shanghai. A recent investigation reveals that the total number of workers employed by factories in Shanghai amounting to 400,000, equivalent to one-fourth of the working mass in China. The total number of factories in Shanghai is estimated at 2,709, of which 82 are cotton mills. The total number of spindles operated by these mills being over 2,000,000, or over one-half of the spindles operating in China. Other important manufacturing factories of equal importance are silk filatures, cigarette and tobacco factories, flour mills, engineering works, printing works, shipyards and iron foundries. Particulars are tabulated as follows:

	No. of Factories	No. of Workers	Capital	Quantity or Value of Output	Remarks
Cotton Spinning	28	65,146	$51,363,000	600,440 bales	—
Cotton Weaving	124	10,000	3,500,000	5,060,000 pieces	Total number of looms, 10,862
Silk Reeling	112	48,345	—	42,700 piculs	—
Silk Weaving	473	—	—	450,000 pieces	—
Wool Weaving	17	—	—	—	—
Knitting	136	8,755	$1,400,000	Socks: 12,761,934 dozen	—
			₮ 45,500	Underwears: 166,390 „	
				Gloves, Scarves, and Caps: 100,000 dozen	—
Silk Lace Making	39	—	—	13,000 pieces	—
Cotton Lace Making	4	—	830,000	600,000 pieces	—
Towel Weaving	2	—	2,000,000	560,000 dozen	Capital: 1 factory unknown.
Other Spinning & Weaving Industries	15	—	—	—	—
Flour Milling	14	2,351	6,988,000	36,836,000 bags	—
Rice Milling	53	429	361,000	1,209,600 piculs	—
Oil Pressing	13	2,682	1,097,000	Oil: 240,000 piculs	
				Seedcake: 638,000 piculs	—
Cigarette	265	16,000	17,371,000	—	—
Cigar	18	358	129,800	40,000,000 pieces	Capital & Workers: 3 factories unknown.
Brewery	54	—	850,000	286,000 piculs	—
Tea Baking	42	—	208,000	—	—

Aerated Water	2	——	340,000	——	——
Sugar	6	——	——	40,000 piculs	——
Canned Goods	38	1,473	878,800	$2,245,800	——
Gourmet Powder	9	471	5,500,000	700,000 lbs.	——
Egg	2	400	2,300,000	$10,214,114	Workers: 1 factory unknown
Casing	6	89	15,000	$201,000 ₮130,000	Capital: 2 factories unknown. Including 5 foreign firms.
Soda and Acids	3	243	1,220,000	10,400,000 catties	Including 8 foreign firms.
Enamelware	16	1,103	1,348,000	₮8,780,000	Value: 7 factories unknown.
Glass	36	3,870	1,052,000	$4.170,000	Workers: 3 factories unknown.
Paper	16	1,508	$1,103,600 ₮1,600,000	——	Capital: 1 factory unknown.
Rubber	45	7,739	$3,173,000 ₮ 377,500	$8,585,000	8 closed down; Workers: 15 factories unknown; Capital: 6 factories unknown; Output: 9 factories unknown.
Cosmetics	31	2,596	$3,597,500 ₮ 60,000	$6,297,051	Capital: 1 factory unknown. Workers: 3 factories unknown.
Bleaching & Printing ...	5	415	630,000	$1,910,000	——
Candles and Soap	30	644	$954,200 ₮ 30,000	——	Including 2 British firms and 4 Japanese firms; Capital: 4 factories unknown.

Varnish and Paints	5	415	630,000	$1,910,000	——
Cement	1	220	1,368,600	376,303 barrels	Output: 9 months only.
Leather Tanning	14	289	₮11,000	1,740,800 lbs.	——
			$54,670	80,520 sheets	
Match	4	150	250,000	23,373 boxes	Workers: 3 factories unknown; Capital: 1 factory unknown.
Pharmaceuticals	10	708	1,740,000	$6,760,000	Output: 1 factory unknown.
Machinery	217	7,099	₮103,000		Capital: 3 factories unknown.
			$2,978,800	——	
Foundry	35	——	₮60,000		Output: 2 factories unknown.
			$167,800	$860,355	
Electric Supplies	48	2,209	$2,186,850	$6,071,392	Capital: 1 factory unknown.
Ship Building	21	——	140,300	——	Capital: 12 factories unknown.
Aluminium Ware	6	268	90,000	——	Capital & Workers: 1 factory unknown.
Hardware	55	983	404,250	$1,890,820	——
Copper & Tin Wares	25	——	₮ 1,500		——
			$299,000	$110,000	
Vacuum Flask	18	351	$209,000	——	Capital: 8 factories unknown; Workers: 9 factories unknown.
Button	13	126	28,100	110,000 gross	——
Hat	89	——	₮ 20,000		——
			$348,410	149,820 dozen	
Umbrella	41	——	——	——	——

Spectacle	6	72	$96,000	——	——
Coal Briquette	12	275	1,105,500	130,500 tons	Capital: 1 factory unknown; Workers: 2 factories unknown; Output: 1 factory unknown.
Paper Box	26	704	155,800	1,108,000 mille.	——
Tooth Brush	15	578	103,650	$791,800	Capital and Workers: 2 factories unknown; Output: 1 factory unknown.
Furniture	24	12,000	₮ 500 $59,800	——	——
Bone Engraving	38	381	$136,000	$347,000	——
Cord (Machine-made) ..	38	——	30,070	380,000 piculs	Capital: 2 factories unknown.
Printing	75	——	12,631,570	——	——
Printing Ink	10	94	345,000	$600,000	Capital: 1 factory unknown; Workers: 1 factory unknown.
Stationary, Musical Instruments, etc.	61	——	767,000	$236,000	Capital: 18 factories unknown; Output: 24 factories unknown.
Phonograph and Records	12	——	₮23,000 $14,000	——	Capital: 7 factories unknown.
Cinema	35	——	——	——	——
Cotton Ginning	16	803	₮136,000 $ 51,000	542,800 piculs	——

The development of home industries in Shanghai is remarkable. According to the investigation conducted by the Bank of China in 1931, the total number of Chinese owned factories in Shanghai is about 2,000, with a total capital of about $300,000,000, empoying about 250,000 operatives. The following index numbers showing the growth of home industry during the past years:

	1930 (1929=100)	1931 (1930=100)	1931 (1929=100)
Cigarette	130	115	149.5
Cotton Weaving	120	128	143.6
Hat	130	—	—
Soap	115	—	—
Cosmetics	110	120	132.0
Machinery	50	125	162.5
Paper	110	125	137.5
Knitting	120	100	120.0
Gourmet Powder	140	112	156.8
Enamelware	100	158	158.0
Rubber	250	200	500.0
Flour Milling	—	120	—
Dyeing	—	120	—
Printing Ink	—	350	—
Paint	—	128	—
Oil Pressing	—	109	—
Bricks and Tiles	—	143	—
Umbrella	—	60	—
Silk Weaving	—	160	—
Wool Weaving	—	89	—
Match	—	120	—

3. As a banking and financial center.—Shanghai is the principal banking center in China. There are in Shanghai about 20 branches of foreign exchange banks, 90 Chinese banks of the modern type (either head offices or branches), and around 100 Chinese banks of the old type ("native" banks). Almost all these banks are situated

within the limits of the International Settlement. These banks hold large sums in silver, stored in their vaults, which serve as reserves against their note issues, and as reserve for current accounts and general banking purposes. According to current investigations, the stock of silver in Shanghai being amounting to over Tls. 120,000,000 and $240,000,000. The storage of these large amounts of silver in Shanghai is one of the essential elements in the far-reaching system of credit which pivots on Shanghai, and on the functioning of which almost the whole of the foreign trade of Central and Northern China, and a great part of the internal trade of those regions, directly depends. The table showing the reserve of silver dollars, taels, and bars kept in Chinese and foreign banks in Shanghai during the 12 months of 1931, follow:

	Silver Dollars (000 omitted)		
	Chinese Banks	Foreign Banks	Total
January	119,970	18,830	138,600
February	113,980	21,020	135,000
March	110,530	22,820	133,350
April	111,560	24,840	136,400
May	115,020	24,100	139,120
June	120,007	24,493	144,500
July	125,520	24,410	149,930
August	129,290	23,760	153,050
September	131,920	22,460	154,380
October	159,060	22,140	181,200
November	158,050	24,380	182,430
December	163,100	26,100	189,200

	Taels (000 omitted)		
	Chinese Bands	Foreign Banks	Total
January	33,120	53,960	87,080
February	42,980	22,060	65,040
March	42,510	37,910	80,420
April	39,180	36,210	75,390
May	39,330	36,060	75,390
June	38,930	33,340	72,720

July	37,250	32,270	69,520
August	34,610	31,340	65,950
September	27,900	33,400	61,300
October	23,960	29,190	63,150
November	22,950	34,940	57,890
December	19,500	33,250	52,750

	Bars		
	Chinese Banks	Foreign Banks	Total
January	219	544	762
February	435	558	933
March	448	595	1,023
April	2,459	—	2,459
May	5,898	2,119	8,017
June	2,478	547	3,025
July	1,481	627	2,108
August	592	—	592
September	356	19	375
October	—	49	49
November	—	—	—
December	1,000	3,300	4,300

The holding of large silver reserves in Shanghai also places the banks in a very strong position in the matter of note-issue. According to recent investigations (August, 1932), the total amount of Shanghai note issues of the nine Chinese note-issuing banks in Shanghai was $226,919,845, and to this figure would have to be added the five or six millions represented by the note issues of foreign banks. The notes issued by Shanghai banks are widely circulated practically all over the country. With the exception of Manchuria and a few provinces in the North and South, the Chinese banks in Shanghai are the only group of banks that issue notes for the use of the country in general. The circulation goes far north as Tsinan in Shantung Province, as far west as Ichang in Szechuen Province, and down to extreme south on the coast. Thus, Shanghai has become not only the clearing house, and exchange center through which accounts between the trading centers of North and South China are settled, but also the store house of almost all Chinese centers' credit balances.

The following table shows the amount of notes, in unit of 1,000 dollars, issued by the Chinese banks in Shanghai during the past four years ending 1931:

	1928	1929	1930	1931
January	——	125,771	110,835	223,985
February	——	116,835	151,946	272,832
March	——	109,372	144,069	258,657
April	——	115,558	154,738	261,840
May	——	124,110	168,252	269,048
June	——	130,680	170,681	279,691
July	——	130,035	172,817	279,464
August	——	128,817	169,213	283,317
September	——	132,399	175,718	299,214
October	——	140,688	183,344	254,522
November	103,432	144,600	187,712	237,595
December	123,646	146,727	254,460	242,361

4. As an investment center.—Since the intensification of civil strife and instability in China, Shanghai, as a place of security, has attracted large sums of money for investment both from the Chinese and foreigners. The great piles of banks, offices, warehouses, and factories stand elsewhere in and around the city show the evidence of the wealth and enterprise of Shanghai. The value of real estates in Shanghai is rising in leaps and bounds, in some places in the International Settlement, the value of land soared to as high as Tls. 500,000 per *mou*, and according to the assesment made in 1930, the total value of lands in the International Settlement alone amounted to Tls. 597,243,161. Other investments in the large public utility companies such as electric power companies, telephone companies, tram-car companies, omnibus companies, etc., are also of paramount magnitude. Thus, if taken all the money invested in Shanghai, the figure will be an unbelievable one.

BOOK FOUR

LEADING CITIES

CHAPTER I

CHINKIANG

CHINKIANG, the provincial capital of Kiangsu since 1928, is located at longitude 119° 28′ E., and latitude 32° 12′ N., with Tanyang on the southeast, Chuyung on the southwest, Lungtan on the west, and the Yangtze River on the north. A part of the city is very hilly, the hills being radiated in three directions from the northern range of the Maoshan (茅山). The chief hills on the northern direction are Huilungshan (迴龍山), Paokaishan (寶蓋山), Huanghoshan (黃鶴山), Mopienshan (磨弁山) and Fenghuangshan (鳳凰山); that on the central direction, Peikushan (北固山), Hsiangshan (象山), and Chiaoshan (焦山); while that on the southern direction, Kuishan (龜山).

Besides being watered by the Yangtse, Chinkiang is also irrigated by a number of rivers, of which the Grand Canal is the largest. The other important waterways are the Paoyenho (寶堰河), which has its source in the Jenjanghsiang district (仁讓鄉) and flows to Tanyang via Paoyenchen (寶堰鎮), the Shayaoho (沙腰河), which flows in two directions into the Yangtse, one easterly via Yaochiachiao (姚家橋), and the other northerly via Takangshih (大港市) and Wuchiachiao (武家橋), and the Kaotzeho (高資河), which flows northerly through Tangkangchen (唐岡鎮) and Kaotzechen (高資鎮) into the Yangtse.

Chinkiang has a number of islands, which are all formed by the silt deposited in the Yangtse River. The most famous of these islands are Taipingchow (太平洲), Huangmienchow (黃泯洲), Yungkuchow (永固洲), Tingyehchow (定業洲), Shihyehchow (世業洲), Chenjunchow (徵潤洲), Lienchengchow (連城洲), Pushengchow (補生洲), Hoshangchow (和尙洲) and Hsinchow (新洲).

The climate of Chinkiang may be seen from the following table:

	Highest	Lowest	Average
Spring	95° F.	17° F.	47.36° F.
Summer	104°	47°	76.49°
Autumn	102°	40°	73.58°
Winter	51°	9°	30.00°

The heaviest rainfall occurs in summer, with spring and autumn next, and winter least.

AREA AND POPULATION

The total area of Chinkiang amounts to 1,046.50 square kilometers, of which 0.48 per cent, or 5.02 square kilometers, are urban districts, and the remaining 99.52 per cent or 1,041.84 square kilometers, rural districts. The total cultivated area of the city covers 1,569,750 *shih mou*, of which 1,309,500 *shih mou* are upland fields, 138,375 *shih mou*, hilly lands, and 121,875 *shih mou*, lowland fields.

The population of Chinkiang is growing steadily. According to the census taken in 1913, there were 470,000 persons residing in the city, but in 1920, according to investigation conducted by the Postal authorities, the population was 474,591. In 1928, the census taken by the *hsien* authorities revealed that there were 106,278 families with 466,202 persons, of which 245,441 are males and 220,761 are females. But according to most recent investigation (August, 1932), the total population is 523,300, including 282,940 males and 240,360 females. The density is 500.05 per square kilometer, and the most densely populated district is the city itself, with Takang (大港), Pingchang (平昌) and Jenjang (仁讓) next. Foreign population consists chiefly of British, American and Japanese. Except a few engaged in business or customs service, the majority of foreigners are missionaries.

The entire city is divided into three *shih* districts (市區)—Chengsiang (城廂), Takang (大港) and Pingchang (平昌)—and 15 *hsiang* districts—(鄉區) Chiaotung (焦東), Tantu (丹徒), Tsungteh (崇德), Yucheng (育城), Chienpi (諫壁), Hsinfeng (辛豐), Shunkiang (順江), Yulung (御隆), Chuanpin (圌濱) Changmou (晃某), Yungku (永固), Kaotze (高資), Shangtang (上黨), Suifeng (歲豐) and Jenjang (仁讓).

COMMUNICATIONS

Chinkiang is privileged with adequate communication facilities both in water and on land. The Nanking-Shanghai Railway traverses a distance of over 70 *li* within the limits of the city, having three stations—Kaotze, Chinkiang West Gate and Chinkiang South Gate—and a branch line to the bank of the Yangtze River for the purpose of unloading cargoes from the steamers and junks.

The city has three completed highways, the Chinkiang-Yangchow Road, the Chinkiang-Chuyung Road, and the Chinkiang-Tanyang Road. The Chinkiang-Yangchow Road, which is 28 *li* long, is entirely built with private capital. The Chinkiang-Chuyung Road, over 80 *li* long, connects the Nanking-Hangchow National Highway at Chuyung, while the Chinkiang-Tanyang Road reaches Changchow via Tanyang. The Chinkiang-Nanking Highway, about 150 *li* long, is under construction by military labor.

The city has one telegraph office at the Hsinhsinho Street (新新河街), three telephone companies, of which two are for long distance services, and one general post office, with three branch offices.

As to water transportation there are two kinds of services, the steamer service plying the Yangtse River, and the steam launch service plying the inland waters. The former service is operated by the China Merchants Steam Navigation Company, the Butterfield and Swire, the Jardin Matheson, and the Nishi Company, while the latter service extends to Yangchow, Shaopo (邵伯), Kacyu, Paoying, Tsingkiangpu (清江浦), Nanking, Hsiennumiao (仙女廟), Taihsien, Luho, Kouan (口岸), Hsiaohokou (小河口), Wuyu (五圩), Yaochiachiao (姚家橋) and Chunghsingchiao (中興橋).

INDUSTRY

The industry of Chinkiang is not very well developed, the most important being rice-milling, foundry, flour-milling, and match-making. Particulars are tabulated as follows:

	No. of Factories	Total Capital	No. of Workers	Out put	Value
Rice-milling	25	$ 53,400	224	100,000 piculs	——
Foundry	1	1,500	25	——	$ 20,000
Flour-milling	1	500,000	150	Flour: 600,000 bags Bran: 80,000 bags	1,680,000 192,000
Match	1	3,000,000	198 males 2,378 females	25,000 cases	1,250,000
Button	9	——	——	75,000gross	40,000
Leather Tanning	7	4,200	31	4,080 pieces	28,700
Brewing	26	87,500	88	——	200,000
Knitting	8	1,950	49	18,000 dozen	22,500
Cotton Weaving	7	1,100	38	5,000 pieces	15,800

COMMERCE

After being made as a provincial capital, the commercial activities of Chinkiang are growing steadily. At present, there 7 modern banks, 8 native banks, 9 pawn shops with a total capital of $497,000, 16 express companies, 58 hotels, 47 lumber firms, 48 cotton cloth dealers, 54 rice shops, 37 groceries, 57 confectioneries, 46 miscellaneous products, 29 hardware dealers, soy makers, and breweries, 27 "Chinkiang" silk dealers, 16 tea dealers, 10 silk and cotton piece goods dealers, 17 printers, and 1 customs broker.

Besides, Chinkiang is also famous for the production of bean oil and bean cakes. Oil is shipped to the interior, while cakes are chiefly exported to South China, Wusih and Changchow. During the prosperous days, the total quantity exported annually amounted to the value of $2,000,000. Other products such as rice, wheat, eggs, lime, poultry, and fish are also important.

CHAPTER II

WUSIH

WUSIH, formerly called Hsi Shan (錫山), meaning tin hills, had, before the Chin Dynasty, rich tin mines in the western hills of the district. A large number of natives and people from other parts of the country were engaged in mining and there were constant strifes among them until the mines were exhausted in the Han Dynasty. Henceforth the district has been called Wusih, which means "no tin." During the Yuan and Ming Dynasties, the boundaries of the district remained almost the same as they are today. In the reign of the Emperor Yung Cheng (雍正) of the China Dynasty a separate district, named Chinkui (金匱), was created out of the western part of Wusih by an imperial decree. Since the formation of the Republic, however, these two district, have been united into one *hsien* again under the name of Wusih.

The *hsien* of Wusih extends about 120 *li* both from east to west and from north to south. It is bounded by Changshu on the southeast, by Kiangyin on the north and northeast, by Wuchin on the north-west and south-east, and by Wuhsien on the south. The southwestern part of the *hsien* is quite hilly, Lungshan (龍山) being the largest of the mountain ranges, while the southern part is situated on the bank of Taihu lake (太湖), which is the inlet of all the streams on the *hsien*. The Grand Canal connects Wusih with Soochow, and the Yangtse River. Over land it is traversed by the Nanking-Shanghai Railway.

AREA AND POPULATION

The area of the *hsien* of Wusih is 1,309.25 square kilometers, of which 99.49 per cent is rural district and only 0.51 per cent urban, and of the rural area, over 96 per cent is devoted to agricultural purposes. The *hsien* comprises of 17 self-govern sections, namely:

Section Number	Name of Section	Area (Sq. *li*)	Area of Cultivated Land (*Mou*)	Percentage of Whole *Hsien*
1	Wusih City	92.3	32,371	2.53%
2	Chingyunshih ..... (景雲市)	221.7	68,283	6.07
3	Yangminghsiang ... (楊名鄉)	155.1	53,145	4.25
4	Kaiyuanhsiang .... (開原鄉)	202.5	50,644	5.55
5	Tienshangshih ..... (天上市)	198.9	66,798	5.45
6	Tienhsiashih ..... (天下市)	229.1	65,718	6.28
7	Huaishangshih .... (懷上市)	230.0	104,334	6.32
8	Huaihsiashih ..... (懷下市)	264.6	73,798	7.25
9	Peishanghsiang .... (北上鄉)	145.3	54,129	3.98
10	Peihsiahsiang ..... (北下鄉)	138.5	43,590	3.79
11	Nanyenshih ..... (南延市)	214.0	83,136	5.86
12	Taiposhih ..... (泰伯市)	309.4	114,987	8.48
13	Hsinanhsiang ..... (新安鄉)	189.4	71,700	5.17
14	Kaihuahsiang ..... (開化鄉)	240.8	63,279	6.60
15	Chingchengshih ... (青城市)	272.2	83,919	7.46
16	Wananshih ..... (萬安市)	285.4	97,943	7.82
17	Fuanhsiang ..... (富安鄉)	260.8	112,496	7.14
	TOTAL	3650.0	1,256,290	100.00

The Wusih *hsien* has a population of 899,291, consisting of 472,074 males and 427,217 females, being 52.5 and 47.5 per cent respectively. The first section, Wusih city, is the most densely populated. The average density of population of the *hsien* is 686.88 persons per square kilometer. Wusih City has the largest number of inhabitants, of over 100,000, with Tienshang, Huaishang, Chingcheng, Chingyun, Tienhsia,, Taipo, and Wanan next having each over 50,000 people.

Most of the people are engaged in agriculture, while merchants and factory workers also form a big class. Detail as in regard to occupations is as follows:

Occupation	Percentage of Total Population
Agricultural	43.00
Commercial	23.40
Industrial	12.00
Educational	0.30
Political	0.30
Unknown or No Occupation	21.00

The net increase of population is about 10 per 1000 annually; birth rate is 40 in a 1000 and death rate 30 in 1000 every year.

COMMUNICATIONS AND TRANSPORTATION

Wusih is situated in the midway of the Nanking-Shanghai Railway, which has five stops within the *hsien* limit of Wusih, namely, Chowkingkang (周涇港), South Gate Flag station (南門旂站), Wusih, Shihtangwan (石塘灣), and Loshe (洛社). The section of this railway line which runs through Wusih is 40.78 kilometers, being the most important means of transportation and communication of the *hsien*. Large quantities of silk, grains, cloths, cotton yarns, etc. are being shipped to Shanghai through this line at the freight of $3.724 per ton of silk, $1.22, rice, $1.284, cloth, and $1.284, cotton.

There are a number of motor highways in Wusih, and the Wusih-Ihsing line of 58 kilometers is now under contruction by the Provincial Government. (1)

As to water transportation, Wusih is well served with numerous water ways. To the south is the Taihu lake, north, the Yangtse, while the Grand Canal, Liangchi (梁溪) creek and other smaller rivers flow through the whole area. These waters are navigated by over a hundred motor and steam launches and numerous oarboats, There are about 18 routes from Wusih to all parts of the Province and Chekiang regularly served by about 20 shipping companies.

(1) Vide: Chapter on Communications and Transportation.

INDUSTRIES

Being one of the richest districts of the Province, Wusih has now become one of the leading industrial centres of China. Before the opening of this century there had already been established cotton weaving factories and flour mills, and during the years of the World War, when foreign imports were greatly reduced, cotton spinning, cotton weaving, silk filatures, and other factories, sprang into existence one after another. The effect of the world wide depression in recent years, however, has been felt here and has considerably checked the rapidity of its further development.

There are at present over 170 factories in Wusih, employing about 60,000 workers. These enterprises represent investments of over $15,000,000. Operating in largest scale are the cotton spinning factories and flour mills, which represent over two-thirds of the total investment. The following table shows the details of factories in Wusih:

Factory	Number of Factories	Number of Workers	Total Capital	Output	
Cotton Spinning	7	14,103	$9,710,000	111,161	bales
Cotton Weaving	23	2,022	762,300	1,100,000	pieces
Silk Filature	50	37,260	——	24,500	piculs
Knitting	33	3,000	180,000	$2,250,000	
Flour Milling	4	742	1,680,000	2,760,000	bags
Oil Milling	8	321	183,000	$3,360,000	
Rice Milling	27	1,510	157,000	——	
Iron Works	8	101	15,500	——	
Soap	4	27	9,000	125,000	boxes
Paper	1	30	15,950	5,000	reams
Printing Works	4	348	70,000	——	
Power Plant	1	——	1,500,000	——	
Magnesium Factory	1	——	30,000	$22,000	

Of the seven cotton spinning mills, the Yeh Chin (業勤) and Yu Kang (豫康) mills devote entirely to spinning of cotton yarns; The Kuang Chin (廣勤), Hsin Shun Mill No. 3, and Ching Feng (慶豐), engage in weaving as well as spinning, and the Li Hsin Mill also engages in spinning, weaving, dyeing and printing. Cotton consumed by these mills is bought from Changshu, Kiating,

Taitsang, and Kiangyin, and also from other provinces as Chekiang, Honan, Shensi and Hupeh. Foreign cotton is imported from India and America, the latter being used in spinning finer grade yarns. Products of these mills are 10, 12, 14, 16, and 20-count yarns, while finer yarns of 40 counts are turned in smaller quantity by the Shun Hsin Mill. Wusih yarns find their market in various provinces of China, and quantities are being exported to Straits Settlements.

With the abundant supply of cotton yarn, weaving factories are being established which now are 23 in number, with over 4000 weaving looms. While modern looms are being employed by a few bigger factories, such as Li Hsin (麗新), Hua Feng (華豐), etc., most of the smaller mills are using old fashion wooden looms. These 23 mills turn out a great varieties of stuffs of all grades. Besides yarn bought from local mills, a part is imported from Nantung and Shanghai. The products are sold either locally or exported to northern provinces and the Strait Settlements.

Silk industry has the longest history of all industries as Wusih has long been a silk producing district. There were 50 filatures in operation in 1932, but due to overwhelmingly adverse effect of the world depression which resulted the unprecedented slump in silk prices, filatures suspended operation one after another. The Japanese undeclared war in Shanghai was another blow to the industry. Huge amounts of cocoons and silk raw are accumulated in stock in godowns for which no market could be found.

Flour milling is another big industry in Wusih, which is carried on in a modern way. There are 4 mills, the Mao Hsin (茂新), Chiu Feng (九豐), Mao Hsin No. 2 (茂新二廠), and the Tai Lung (泰隆), the first named being the oldest. Over a million piculs of wheat are consumed by these four mills, of which partly is supplied by local provision merchants, and the bigger part is bought from provinces north of the Yangtse and from America and Australia.

Rice mills are also very flourishing in Wusih, although most of them are but operated in small scale, with capital ranging from several thousand to over ten thousand

dollars. About half of the 27 mills are equipped with modern milling machines operated by electricity or Diesel engines. Rice milled in Wusih is from neighborhood rice fields and Anhui province. The output of 1929 was over 1,000,000 piculs, 1931, 800,000 piculs, and in 1932 it further decreased to 600,000.

Oil milling had its best time in 1927, when there were 12 mills operating. At present, only 8 mills are working, and the Heng Teh (恆德) is most important of all. The mills used to purchase beans from Dairen, but in recent years, Yingchow (潁州) and Pengpu (蚌埠) beans from Anhui are being extensively used. About 12 catties of oil can be extracted from a picul of higher grade beans. In Wusih, however, many mills are laying more stress on the business in beancakes than in oil. Oil mills dispose of their products in places within the Province and in Chekiang.

There are only eight iron works equipped with more up-to-date machinery, but small works are found everywhere throughout the *hsien*. Several hundred engines, rice milling machines, silk filature machines, etc. are turned out every year.

COMMERCE

Wusih is only second to Shanghai, in regard to commercial importance, especially for the rice and silk trade. It had been the collecting and distributing center of rice, and a rich silk producing district. With the development of industry, business in all lines as banking, godown, retailing, etc. began to flourish. During the last two years, however, a sharp decline in commercial activities took place, as the City is deprived of its position as the centre of rice trade and because of the tragic drop in silk price.

Rice in Wusih has the longest history among all trades. Beside the quantity produced in Wusih vicinities rice is gathered from many neighboring districts. There are over a hundred rice dealers, of whom some devote themselves to the collecting of rice from local growers and sell to local consumers. But the bigger merchants, who gather in Peitang (北塘), Wusih, buy from other places

and sell to Soochow, Shanghai, and places in Chekiang. The cargo is carried by sail boats which navigate the Grand Canal, Woosung Creek, and the Tai Hu Lake. Hundred of incoming vessels gather at Peitang, which forms one of the four big rice markets in the Province. Rice imported annually from Ihsing amounts to 1,200,000 *shih*, annually, Kiangyin, 800,000 *shih*, Wuchin, 500,000 *shih*, and Tanyang, Liyang, etc., about 1,000,000 *shih*.

Over three hundred silk cocoon dealers are established in Wusih, who handle the production of 62,000 piculs of cocoons every year. A little less than one-third of the production is supplied to Shanghai cocoon merchants, and the remainder is baked locally.

Rice and silk cocoons are stored in godowns which have become a regular business serving the two big trades. Cocoon godowns charge a storage fee of 5 cents per bale of about 35 catties per month, while rice godowns charge 1.40 cents per *shih* for the first month, 3.50 cents for three months, and storage after three months is .80 cents per month. Unhusked rice stored is charged at 20 per cent discount, but no discount is allowed for wheat and other cereals.

There are seven modern style banks and 18 native banks in Wusih. With the exception of the Kiangsu Provincial Bank which acts as the agent for the Provincial Government, and the Farmers Bank which devotes primarily to cooperative services, all banks are taking collateral loan as their principal business. The biggest borrowers are the silk filatures, cotton spinning and weaving factories, and flour mills, while rice dealers also obtain accommodations from them. Loans to silk industry are decreasing, while to cotton industries increasing. Deposits are usually from individuals. The 18 native banks are all established in Peitang, and their business also consists of loans to silk and rice merchants.

The money market in Wusih fluctuates with the seasons. Millions of silver dollars are shipped here during the months May and June every year for the purchasing of silk cocoons which are then in season. The money again flows into the city as the silk producers make purchases after they sell their products. The market is then full of

cash, which will later be used for collecting wheat in the summer harvest in June and July. The silver is again sent into the city by the farmers when they have disposed of their wheat.

COMMERCIAL FIRMS IN WUSIH

Firms	Number
Rice dealers	143
Cereal dealers	113
Restaurants	63
Flour dealers	51
Butcheries	106
Fish shops	15
Groceries	6
Provisioners	22
Fruit shops	54
Tung and bean oil dealers	13
Brewers	52
Dairies	92
Silk and cocoon dealers	318
Silk goods stores	44
Cotton yarn dealers	21
Cotton piece goods dealers	6
Hat and shoe stores	48
Hemp and ramie dealers	37
Iron foundries	18
Bamboo dealers	22
Lacquer and dye dealers	15
Porcelain dealers	18
Hardware stores	28
General stores	91
Electric supplies	9
Photographers	19
Silver smiths' shops	41
Book stores	13
Paper shops	13
Stationery shops	11
Incense shops	14
Express companies	19
Godowns for grains	30
Godowns for silk and cocoons	9
Pawn shops	34
Hotels	25
Newspapers	4
Banks	7
Native banks	18

CHAPTER III

WUHSIEN

WUHSIEN, or better known as Soochow, was the former capital city of Kiangsu Province. It is situated at the crossing point of the Grand Canal and Loukiang (婁江) River, longitude 4° 1′ E. and latitude 30° 12′ N., with Kunshan on the east, Changshu on the northeast, Wusih on the north, Taihu Lake on the west and Wukiang on the south. The highest temperature in the spring is 65° F., and the lowest, 25° F., an average of 45° F. In summer, the highest temperature is 95° F., and the lowest, 60° F., an average of 77° F. The highest temperature in both autumn and winter is 40° F., and the lowest, 30° and 20° respectively, showing an average of 35° F. for autumn and 30° F. for winter.

AREA AND POPULATION

The total area of Wuhsien is 2,528.75 square kilometers, of which 0.42 per cent or 10.62 square kilometers are urban districts, and the remaining 99.58 per cent or 2,518.13 square kilometers, rural districts. The total area of cultivated lands covers 3,688,875 *shih mou*, of which 2,170,125 *shih mou* are upland fields, 330,375 *shih mou*, hilly lands, and 1,292,625 *shih mou* lowland fields.

According to an investigation conducted in July, 1932, the total population of the city was 907,590, including 483,591 males and 423,999 females. The density per square kilometer was 358.91.

The city of Wuhsien is composed of seven *shih* and 20 *hsiang* districts. Their names and their respective distance from the city being tabulated as follows:

	li
Hsukuan Shih (溆關市)	18
Lumu Shih (陸墓市)	9
Hsiangcheng Shih (湘城市)	32
Mutoh Shih (木瀆市)	18
Hengching Shih (橫涇市)	33
Nanpeichiao Shih (南北橋市)	25
Chouchuang Shih (周莊市)	56
Lochih Hsiang (甪直鄉)	34
Kuangfu Hsiang (光福鄉)	45
Yinshan Hsiang (尹山鄉)	14
Kuohsiang Hsiang (郭巷鄉)	15
Shanjenchiao Hsiang (善人橋鄉)	36
Hsihua Hsiang (西華鄉)	58
Chinshu Hsiang (金墅鄉)	32
Tungchienshan Hsiang (東前山鄉)	80
Tunghoushan Hsiang (東後山鄉)	80
Hsishan Hsiang (西山鄉)	10
Chefang Hsiang (車坊鄉)	23
Hsiehtang Hsiang (斜塘鄉)	13
Tungchiao Hsiang (東橋鄉)	30
Tienching Hsiang (田涇鄉)	40
Luhsiang Hsiang (陸巷鄉)	40
Lishu Hsiang (蠡墅鄉)	8
Wuchungchin Hsiang (五浬涇鄉)	15
Huangti Hsiang (黃埭鄉)	24
Hsiangshan Hsiang (香山鄉)	30
Weiting Hsiang (唯亭鄉)	25

COMMUNICATIONS

The most important communication system of the city is the Nanking-Shanghai Railway, the section traversing the city being 98 kilometers long. The stations situated within the city limits are six in number, namely, Chengyi (正儀), Kuantuli (官瀆里), Waikuatang (外跨塘), Weiting (唯亭), Hsukuan (溆關) and Waungting (望亭).

There are two provincial and three district highways running through the city. The two provincial highways are the Soochow-Wukiang section, which is 13.49 kilometers long and 30 meters wide, and Soochow-Changshu section, which is 34.50 kilometers long and 30 meters wide, of the Changshu-Kashing Highway. The three district highways are the Soochow-Kunshan Road, which is 31.2 kilometers long and 23 meters wide, the Soochow-Wusih Road, 35.7 kilometers long and 23 meters wide, and the Waungting-Tunghoushan Road, 100.9 kilometers long and 23 meters wide. The Soochow-Kunshan highway starts from Loumen (婁門) and ends at Kunshan via Waikuatang and Weiting. The Soochow-Wusih Road starts from Fengchiao (楓橋), and ends at Wusih via Hsukuan and Waungting. The Waungting-Tunghoushan highway starts from Waungting and ends at Tunghoushan (東後山) via Kuanfu, Shangjenchiao, Mutoh, Hengchin, Huanglu (黃渡) and Tuchun (渡村).

Aside from the land transportation, there are 25 steam launch lines plying regularly between the city and its neighboring districts. The districts which are accessible by steam launches from Soochow are Shanghai, Hangchow, Huchow (湖州), Kashing (嘉興), Nanzin (南潯), Shengtseh (盛澤), Hsitang (西塘), Luhsu (盧墟), Pingwang (平望), Tungli (同里), Changsu, Huangti, Wangyichiao (旺倪橋), Chenmo (陳墓), Mutoh, Kuanfu, Chouchuang, Tangkou (湯口), Tachiangmen (大糟門) Tungting Tungshan (洞庭東山), Shihtang (石塘), Hengching, Meichunchen (梅村鎮), Wusih, and Hsukuan.

INDUSTRY

Wuhsien is not an industrial city, and the number of large-scale factories is very limited. Particulars of both mechanical and handicraft industries are tabulated as follows:

	No. of Factories	Total Capital	No. of Workers	Output		Value
				Quantity		
Rice-milling	14	$ 57,350	—	151,600	piculs	—
Oil-Pressing	1	20,000	—	—		$100,000
Iron Work	1	3,000	—	—		10,000
Match	3	—	—	30,000	cases	—
Cotton Weaving & Spinning	11	2,010,000	—	—		₮5,000,000
						$510,000
Silk Weaving	20	100,000	—	—		1,000,000
Knitting.	6	25,700	—	Socks: 30,300	dozen	85,700
				Scarfs: 200	dozen	1,700
				200	dozen	1,100
Paper	2	550,000	—	Cardboard: 8,000	tons	1,000,000
Satin Weaving	60	—	1,000	—		3,000,000
Embroidery	—	—	10,000	—		1,000,000
Grasscloth	—	—	4,000	150,000	pieces	820,000
Bone Carving	—	—	—	—		600,000
Scissors	11	—	—	200,000	pieces	20,000
Spectacle	—	—	300	180,000	pairs	100,000
Leather Ware	39	—	—	—		250,000
Mat Weaving	—	—	—	40,000,000	pieces	800,000
Grass Carpet	1	4,000	—	20,000	cubic feet	4,000
Hemp Cord	10	—	—	240,000	catties	72,000
Used Cloth Board	—	—	—	3,000,000	pieces	210,000

COMMERCE

According to the investigation conducted by the Social Investigation Department of the District Government, the annual import and export trade of the city is as follows:

	import	Export
Agricultural products	$ 2,702,000	$14,073,000
Mineral products	23,000	965,000
Handicrafts	1,122,000	2,876,000
Machinery products	1,595,000	12,000
Meat, Poultry, and Game	1,075,000	1,910,000
Silkworm and Mulberry leaves	15,000	2,317,000
Fertilizers	4,280,000	5,000
Medicinal Herbs	203,500	9,000
Feuls	1,236,000	495,000
Condiments	1,306,000	210,000
Other foodstuffs	2,528,000	830,000
Industrial products	490,000	—
Ornamentals	339,000	—
Superstitional products	548,000	—
Bamboo and wood wares	361,000	255,000
Total	17,824,100	23,957,000

Wuhsien has 12 modern banks, and except the Tienyeh Bank (田業銀行), which had its head office in the city, the rest are all branches of Shanghai banks. The total number of native banks is 30, with an aggregate capital of $485,000, and an annual business turnover of $10,000,000. Besides, the city also has over 40 pawn shops with a total capital of $1,658,600 and an annual business turnover of $3,171,000, 27 hotels, 7,178 small shops, 247 commission agents, 29 agencies, 19 middlemen, and 37 canvassers.

CHAPTER IV

NANTUNG

NANTUNG, one of the most important cities in northern Kiangsu, is situated at longitude 120° 52′ E. and latitude 32° 1″, with Haimen on the east, Jukao on the north, and Yangtse River on the south. Except a few hills, the whole city is on a large plain, traversed in the center by the Yunyenho River (運鹽河) and its numerous tributaries. Thus, the city abounds with harbors, the most famous being the Tien Sheng Kang (天生港), Lu Ching Kang (蘆涇港), Jen Kang (任港), Yao Kang 姚港), Ta Li Kang (大李港), Ssu Yu Kang (鯉魚港), Ying Chuan Kang (營船港) and Fu Min Kang (富民港,

The climate of Nantung is temperate. The average temperature in the spring is 41° F., 66.6° F. in summer, 77.7° F. in autumn, and 52.6° F. in winter. The average rainfall is 66 mm in sprnig, 89 mm in summer, 141 mm in autumn, and 38 mm in winter.

The communication system in Nantung is very adequate. Bus routes radiate from the city of Haianchen (海安鎮) via Jukao in the north to Chukang (掘港) in the north-east to Haimen and Chitung in the south-east, and to Tien Sheng Kang in the west. The nearest railway is the Lunghai Railway, which runs to the east of the neighboring city Tungshan, and it has been planned that branch line be built passing through Nantung to Tsungming. Two shipping companies, the Ta Tung Jen Kee (大通仁記) with 3,533 tons, and Ta Dah (大達) with 3,634 tons, are operating a regular steam launch service between Shanghai and the city. The Yunyenho and Chuanchangho (串場河) rivers and a network of creeks and canals connect the city and its many neighboring districts, which can all be reached within a very short period of time.

AREA AND POPULATION

The total area of Nantung is estimated at 2,456.75 square kilometers, of which 1.47 square kilometers are urban districts and 2,455.28 square kilometers rural districts. Among the rural districts, 49 per cent are salt fields; 38 per cent farms; 9 per cent sand fields, 3 per cent graveyards, and 1 per cent alluvial fields.

The total population of Nantung is 1,358,461, including 725,152 males and 633,309 females. About 9.8 per cent of the total population are residing in the city, and 90.2 per cent, in country districts. The density of the urban population is 22,232 per square kilometer, and that of the rural population, 163 per square kilometer.

Politically, Nantung is divided into 18 districts, namely, the Chengchu (城區) or the city district, Tangchachen (唐閘鎮), Shihkangchen (石港鎮), Chinshachen (金沙鎮), Yutungchen (餘東鎮), Pingchaochen (平潮鎮), Huassuchen (花四鎮), Yuhsichen (餘西鎮) Peipuchen (白蒲鎮), Liuchiao (劉橋), Tienshengkang (天生港), Luchinkang (盧涇港), Jenkang (任港), Yaokang (姚港), Ssuanchen (四安鎮) and Hsitingchen (西亭鎮). Among these districts, the Chengchu, Chinshachen, Shihkang and Tangchachen are the most prosperous. The following table shows the number of shops and their total annual business turnover in each of the four districts:

	No. of Shops.	Annual Business Turnover.
Chengchu	2,000	$10,000,000
Chinshachen	1,500	3,000,000
Shihkang	1,500	2,500,000
Tangchachen	8,000	3,000,000

INDUSTRY

Thirty years ago nothing can be said of the industrial development in Nantung. But since the closing years of the late Ching Dynasty, under the able leadership of Mr. Chang Chien (張謇), noted scholar and industrialist,

Nantung has grown into the third largest industrial city in Kiangsu Province. The first factory established was the Ta Sheng Cotton Mill (大生紗廠) in 1899, and up to 1932, there were 20 modern factories operating in the city. Details of the development are tabulated as follows:

	No. of Factories	Remarks.
1899-1911	3	1 cotton mill, 1 flour mill, and 1 oil mill.
1912-1916	2	1 rice mill and 1 power plant.
1917-1921	3	1 match mill, 1 cotton mill and 1 oil mill.
1922-1926	4	1 candle and soap mill, 1 oil mill & 1 power plant.
1927-1931	3	1 absorbant cotton mill, 1 cloth mill, and 1 foundry.
1932	5	2 cloth mills, 1 dyeing & weaving mill, 1 oil mill, and 1 silk weaving mill.
Total	20	

Particulars concerning the various modern factories now operating in Nantung are as follows:

	No. of Factories	No. of Workers	Capital	Annual Output
Cotton spinning	2	8,469	₮2,500,000	Yarn: 70,664 bales Cloth: 273,000 pieces
Cotton weaving	3	168	$ 12,000	$87,500
Dyeing & weaving	1	20	1,000	3,600
Silk piece goods	1	88	——	——
Knitting	—	—	——	23,520
Nankeens	—	—	——	12,000,000
Flour milling	1	70	625,000	₮3,120,000
Rice milling	2	68	38,000	$2,216,000
Oil pressing	2	80	90,000	5,070,000
Match making	1	310	20,000	120,000
Candle and soap	2	14	9,000	40,456
Absorbant cotton	1	26	3,000	11,000
Foundry	1	3	1,500	——
Power plant	1	28	₮120,000	90,000
Total	18	9,344	₮2,620,000 $ 799,500	

Among all these factories, the Ta Sheng Cotton Mill is the largest. It was established by Mr. Chang Chien at a capital of Tls. 1,130,000, with 40,500 yarn spindles. In 1915, an addition of $800,000 in capital was made, and the number of yarn spindles was increased to 61,180. Besides 400 looms were also installed. In 1910, a branch mill was established at Kiangchiachiao, and the new mill started operation since 1924. At present the total capital being raised to Tls. 2,500,000, and their output is either sold locally or shipped directly to Shanghai.

There is only one flour mill in Nantung, the Fu Sin Flour Mill (復新麵粉廠), which was established in 1911 by Mr. Chang. It has a motive power of 550 h.p., and equipped with 19 brass grinding machines, 8 packing machines, 16 sorting machines, 2 wheat-moistening machines, 16 ginning machines, and 31 sieving machines. Except supplied by local farms, wheat is bought from Kaoyu, Chiangyen (姜堰), Paoying, Taihsing, and Tungtai. The annual consumption of wheat is 500,000 piculs, and the annual output 1,500,000 bags of flour and 150,000 bags of bran. Flour is chiefly consumed in cities in Kiangsu and Anhui Provinces, and Hangchow, Ningpo, Foochow and Tientsin; while the bran is shipped to Chinkiang, Wuhu, Wuhsien, Jukao, Haimen, and Changsha.

The most famous brewery in Nantung is the I Sheng Brewery (頤生酒廠) at Changlochen (常樂鎮), also established by Mr. Chang with a capital of $40,000. The annual consumption of millet, wheat and barley is over thousand piculs, and the annual production of wine is 1,500 jars.

The number of rice mills in Nantung is two, the Ta Dah (大達), a pure rice mill, and the Heng I Ming (恆益明), an oil mill but engaged in rice milling as its side business. The Ta Dah Mill is located at Tangcha with a capital of $60,000. It is equipped with one Diesel engine of 80 h.p., 8 husk removing machines, and 8 mills. The annual quantity of paddy milled is 420,000 piculs, and the amount of milled rice, 221,000 piculs.

Kuang Sheng (廣生), Heng I Ming, and Ho Feng (和豐), are the three oil mills in Nantung. The Kuang Sheng Mill was established in 1903, with a capital of $300,000, devoted to production of cotton-seed oil. The

annual production being 300,000 piculs of cotton-seed oil and 200,000 piculs of cotton-seed cake. The by-products of the mill being 1,000 piculs of waste cotton and over 100,000 piculs of cotton-seed shells, which are used as fuel. The Ho Feng Mill is specialized in pressing bean oil. It is capitalized with $40,000, and equipped with one bean-cutting machine, and 18 oil presses. Soya beans are shipped from the local fields, Shanghai and Kaoyu. The annual production being 2,500 piculs of bean oil and 300,000 pieces of beancakes. The Heng I Ming Mill,. besides engaged in rice-milling, is also specialized in extracting bean oil. It is capitalized at $50,000, and equipped with 3 rice-milling machines, 16 oil presses. The annual production of bean oil being 2,500 piculs, beancake, 27,000 piculs, and rice, 10,000 piculs.

Tung Shui (通燧) is the only match factory in Nantung. It was established in 1917 with a capital of $20,000. The raw materials are all shipped from Shanghai, and the annual production amounts to 4,500 cases of safety matches.

There are two factories in Nantung engaged in candle and soap manufacturing, the Tung Yao (通耀) and the Hsin Hua (新華). The Tung Yao Mill was established in 1922 with a capital of $3,000. The annual output is 1,000 cases of candles and 1,500 cases of soap. The Hsin Hua Mill is comparatively larger in scale. It is located at Changchiao (長橋), and its capital is $6,000. The annual output of candles amounts to 5,000 cases, and that of soap, 3,000 cases.

There is only one power plant in Nantung, the Tung Ming Factory (通明). It has a capital of Tls. 120,000, and equipped with six dynamoes. The daily supply of electricity is 2,000 k.w. Besides, there is a very small plant known as the Chin Hsing Plant (金星電廠) located at Chinshashih. Its daily supply amounts to 300 k.w. only.

The Tze Sheng Ironworks (資生鐵廠) was founded by Mr. Chang with a capital of Tls. 300,000. The annual production of pig iron amounts to 300 tons, and it can

produce over 1,000 cotton ginning machines a year and 800 caldrons a day. Raw material is obtained from Hankow and Chekiang, and sometimes the works also handles the repairing and making of parts for steam launches.

PRODUCTS

The most important agricultural product of Nantung is cotton, which is grown in all parts of the city especially in the Liuchiao and Peipu districts. The best quality cotton produced in Nantung is known as *chichiaohua* (鸡脚花), and the next, *shahua* (沙花). Nantung cotton has a fine and long fibre, and a whiter color than the Shensi cotton. But its defect lies in the stiffness and lack of elasticity. The water content is about four to five per cent, and it is only suited for the spinning of 20 or 16 count yarns. The annual production is approximately 1,500,000 piculs.

Being situated along the sea coast, Nantung is also famous for its production of salt. The first modern salt manufacturing company was established by Mr. Chang Chien under the name of Tung Hai (通海). Besides engaged in salt manufacturing, the company is also engaged in reclamation work. In view of the success of the Tung Hai Company, over 19 companies of the similar nature were established one after another. The total amount of money invested being estimated at $20,000,000, and the area of land reclaimed amounted to 2,000,000 *mou*. But during recent years owing to business depression, a number of the companies have been forced to close down.

Silkworm rearing in Nantung was not so popular until 1916. Under the constant encouragement of the local Chamber of Commerce, the annual production of cocoons now gradually increased to the value of $500,000. A considerable profit has also been made from the silk weaving industry.

The fishing business in Nantung is very prosperous. During the *wong yu* (黃花魚, *Corvula Schlegeli*) season alone, the catch is valued at over 200,000. Other principal aquatics annually produced in Nantung is 40,000 piculs of sea blubber, and 33,000 piculs of shrimps and other fishes.

COMMERCE

Over 10,000 business firms and shops are operating at Nantung, most of which are situated within the city. Details of some of the larger organizations are tabulated as follows:

	No. of Firms	Capital	Annual Business Turnover
Banks	9	——	——
Native Banks	19	$ 679,000	$10,710,000
Pawnshops	18	——	2,000,000
Godowns	2	——	——
Nankeen Dealers ...	—	11,800,000	——
Cotton Dealers	118	——	——
Cocoon Dealers	31	——	500,000
Timber Dealers	3	60,000	240,000
Bamboo Dealers	1	10,000	150,000
Coal Dealers	1	20,000	140,000 (Tons)
Tin Foil Dealers ...	1	40,000	150,000
Silk Piece Goods	1	10,000	18,000
Groceries	7	123,000	1,940,000
Brass and Tin Wares	1	40,000	150,000
Fish Dealers	2	——	——
Firewood Dealers ..	2	——	——
Rice Dealers	47	——	——

The principal items of imports of Nantung consist of daily necessities, while among the exports, raw cotton, nankeen and cotton yarn are the most important. The following table shows the chief articles annually imported and exported into and from Nantung:—

IMPORTS

	Quantity	Value	Where From	Remarks.
Rice	400,000 pls.	——	Anhui	Chiefly *sien mi* (籼米) and *kan mi* (粳米), both of non-glutinous variety.
Timber	——	₹ 1,000,000	Foochow and Wenchow	It is classified into *suan lien* (雙連), *lien pan* (連牛), *tung mu* (桶木), *kien tan* (丝單), *ou tan* (甌單), & *ku hu*. (估貨).
Paper	——	$1,500,000	Wenchow and Hangchow	Wenchow paper is classified into *chien* (尖) and *ping* (屏); while Hangchow paper, into *pa yi chien* (八一尖), *fang kao* (方高), *huang chien* (黃尖) *chung ping* (中屏), *kao ping* (高屏) & *siao ping* (小屏).
Tin foil	——	$800,000	Hangchow	——
Sugar	30,000 pcgs.	——	Shanghai	Consists of white sugar, brown sugar, green sugar and candy sugar. Annual business turnover being $600,000.
Tung oil	3,000 pls.	——	Hankow	Consists of *pei yu* (白油), *hung yu* (洪油) and *pi yu* (皮油).
Flax	1,000 pls.	——	Hangchow Anhui and Lanchi (蘭谿)	——
Kerosene	110,000 tins	——	Shanghai	Products of Socony Asia, Texaco and Kwang Hwa (光華)
Tobacco	50,000 cases	——	Shensi	Annual business turnover, $800,000.
Cigarette	3,000 cases	——	Shanghai	Annual business turnover, $500,000.

EXPORTS

	Quantity	Where to	Remarks.
Raw cotton	400,000 pls.	Shanghai, Wusih, Kiangyin and Taitsang	Total business turnover, $24,000,000.
Nankeen (Kuan Chuang 關莊)	80,000 rolls of 35-40 pcs. each	Manchuria	Annual business turnover, $8,000,000.
Nankeen (Hsien Chuang 縣莊)	50,000 packages of 100 pieces each	Jukao, Tsingkiangpu, Huaiyin Kaoyu, Paoyin, Taihsien & Yencheng.	Annual business turnover, $500,000.
Nankeen (Chin Chuang 京莊).	10,000 packages	Kiangning & Hangchow	Annual business turnover, $800,000
Cotton Yarn	120,000 cases	Shanghai & Hankow	

CHAPTER V

KIANGTU

KIANGTU, or better known as Yangchow, is located at longitude 29° 26′ E. and latitude 32° 25′ N., with Kaoyu on the north, Taihsien on the north-east, Luho and Icheng on the south-west, Yangtse River on the south, and Tienchang (天長) of Anhui Province on the west. The chief hills of the city are Shukang (蜀岡), 200 feet high, Kanchuanshan (甘泉山), 300 feet high, Niaoshan (鳥山), 300 feet high, Maanshan (馬鞍山), 400 feet high, and Naishan (捺山), 600 feet high. The city also has several rivers. The Grand Canal and its branches run about 180 *li* long within the limits of the city; the Yungyenho (運鹽河), 70 *li* long; the Peitaho (白塔河), 40 *li* long; the Iho (儀河), 15 *li* long; and the Shaho (沙河), 17 *li* long. The average depth of these rivers is about five to 20 feet. The city has two lakes, the Shaopohu (邵伯湖), 230 square *li* in area, and the Luyanghu (綠陽湖), 12 square *li* in area.

The climate of Kiangtu is mild. The average temperature is 43° F. in spring, 65° in summer, 80° in autumn, and 52° in winter. The average rainfall being 22 mm in spring, 351 mm in summer, 333 mm in autumn, and 163 mm in winter.

Kiangtu is divided into 10 administrative districts, namely, Chenghsiang Shih (城廂市) or the city district, Hsingfeng Shih (興墾市), Hanyang Shih (邗陽市), Hsiennu Shih (仙女市), Tachiao Shih (大橋市), Shaoshuichow Shih (邵水周市), Nanpeichi Shih (南北集市), Iling Shih (宜陵市), Shaopo Shih (邵伯市), and Tayi Hsiang (大儀鄉).

The city has two highways, the Chinkiang-Kiangtu Highway and the Kiangtu-Hochiachiao Highway. The former starts from Fuyunmen (福運門) and ends at Luyu (六圩), while the latter starts from Hsuyingmen (徐凝門) and ends at Hochiachiao (霍家橋). Both highways form the main routes between Kiangtu and its neighboring districts along the Grand Canal and Shanghai.

AREA AND POPULATION

The area of Kiangtu is 2,263.50 square kilometers, of which only about 14.49 square kilometers are urban districts, and the remaining 2,249 square kilometers, rural districts. Among the rural districts, about 89.32 per cent is cultivated fields, and 10.68 per cent alluvial fields.

The total population of Kiangtu is 1,159,434, including 595,800 males and 563,634 females, of which 14.4 per cent are urban population, and 85.6 per cent, rural population. The density per square kilometer is 512.23. Of the total population, about 40 per cent are employed, details of which are tabulated as follows:

	Males %	Females %
Agricultural	40.0	65.0
Industrial	15.0	1.0
Commercial	15.0	5.0
Labor	11.0	6.0
Educational	15.0	—
Law and Medical	2.0	—
Military and Civil Service	0.3	—
Religious	1.0	1.0
Unknown	0.7	22.0
Total	100.0	100.00

Classified according to wealth the percentages are as follows:

	Annual Income	Per cent.
Over	$50,000	0.4
"	10,000	0.6
"	5,000	1.0
"	2,000	20.0
"	500	25.0
"	200	25.0
"	100	24.0
Under	100	4.0
Total		100.0

INDUSTRY

The industry of Kiangtu is not developed. It can be summed up as follows:

	No. of Firms	Total Capital	No. of Workers	Value of Annual Output
Power plant	1	$320,000	62	$219.400
Incense makers	2	12,000	38	32,400
Lacquerware makers..	5	4,200	45	45,000
Tooth brush makers..	6	1,350	40	10,500
Ham makers	7	38,000	—	72,500
Soy makers	8	——	—	382,000

The only power plant in Kiangtu is the Chen Yang Power Company (振揚電汽股份有限公司). It was established in 1913, and equipped with one dynamo, and one turbine. The annual consumption of anthracite coal is 1,200 tons, and of bituminous coal, 4,000 tons. The daily supply of current being 1,500 k.w. The chief articles turned out by the cosmetic makers are hair lotion and face powder, both of which were very popular throughout the country before the introduction of imported goods. But now, the market is limited to local consumption and interior cities. The tooth brush makers are all on the handicraft system, each being capitalized with less $1,000. The chief material used is cow bone and bristle, all obtained locally, and the principal markets are Kaoyu, Paoyin, Huaian, Huaiyin, Hsinghua and Yencheng. The soy makers are also the manufacturers of pickled vegetables, which are of nation-wide fame. The annual production amounts to over $300,000, and its market extends to as far as Straits Settlements.

COMMERCE

The principal imports of Kiangtu include cotton and silk piece goods, coal, and timber; while the principal exports consist of pickled vegetables, lacquerware, wheat and paddy. The export of wheat and paddy are the most important, each amounting to over 800,000 piculs a year.

The most important commercial firms in Kiangtu are the native banks, which are over 30 in number. The rate of exchange is based on that of Chinkiang, which takes the Shanghai exchange as standard. The annual business of some of the banks amounts to over $10,000,000, but their maximum declared capital is only about $30,000 each.

CHAPTER VI

TUNGHAI

TUNGHAI, or better known as Haichow, is located at longitude 29° 13′ E., and latitude 34° 31′ N., the north-eastern corner of Kiangsu Province. It has Kuanyun on the east, Shuyang on the south, Kongyu on the north, Suchien on the south-east, Tancheng (郯城) of Shantung Province on the north-west. Originally, the city did not command any importance, but after the construction of the Lunghai Railway, which has its east termination in Tapu (大浦), a suburban district of the city, it becomes not only the chief exit for the products of Kansu, Shensi, Honan and Kiangsu, but also the chief collection and distribution center for products along the Tientsin-Pukow Railway on the east, and the Peiping-Hankow Railway on the west.

Being situated on the northern part of Kiangsu Province, the climate of Tunghai is comparatively cold. The highest temperature in the year is 90° F., and the lowest, 5° F. The average temperature in the spring is 30° F., 75° in summer, 40° in autumn, and 18° in winter. Rainfall is heaviest in the summer season, while a dry spell is common in the winter.

AREA AND POPULATION

The total area of the city is 15,000 square *li*, and it is 158 *li* long from east to west, and 125 *li* from north to south. The major portion of the city is a big plain, which occupies about 9,000 square *li*, and the area of hilly regions is only about 2,000 square *li*. According to the report of the District Agricultural Association, the soil of the city is mostly clayey in nature, forming about 86.5 per cent, and the remaining 13.5 per cent being sandy in nature. The total area of fields under rice cultivation is 417,291.41 *mou*, of which 196,807.51 *mou* are first class fields, 32,193.63 *mou*, second class fields, 70,109.64 *mou*, third class fields, and 118,180.63 *mou*, reed fields.

The total population of Tunghai is 71,536 families with 372,739 residents, of which 203,314 are males and 169,425 are females. The distribution of the population in the eight administrative districts are as follows:

District No.	No. of Families	Males	Females	Total
I	7,150	19,667	16,114	35,781
II	7,218	17,197	14,656	31,853
III	7,664	22,520	20,231	42,751
IV	8,058	23,341	21,772	45,113
V	8,521	23,627	19,697	43,324
VI	10,483	24,709	24,703	49,412
VII	12,487	44,850	25,077	69,927
VIII	10,955	27,403	27,175	54,578
Total	71,536	203,314	169,425	372,739

The density of population is 31 per square *li*, and the number of rural families is 47,850, or about 67 per cent of the total number of families.

COMMUNICATIONS

The principal means of communication on land is the Lunghai Railway, which runs 67 kilometers within the limits of the *hsien*. As to water transportation, there are six steamship companies—the Shun Pu (申浦), Shun Ning (申甯), Ho Chung (合衆), Ta Tung (大通), Ta Hsin (大興) and Ta Chen (大振)—owning a total of 15 steamers playing regularly between Shanghai, Tsingtao and Dairen. Besides, the city has four highways, two provincial and two district, two main waterways, the Changweiho (嘗薇河), and Yenho (鹽河), two telegraph offices, two post offices, and one telephone company located at Hsinpuchen (新浦鎮).

INDUSTRY

The industry of Tunghai is not well developed. It has only one flour mill and seven oil mills which are comparatively modern in type, while the rest are still in the handicraft stage. Particulars of some of the industrial enterprises are as follows:

	No. of Firms	Total Capital	Output Quantity	Output Value	Market.
Flour Mill	1	$200,000	——	$1,420,000	Honan, Shensi, & Local
Oil Mills	7	30,000	Beancake: 227,000 pcs.	295,100	Hsupu (浦補) & Liuho(劉河)
			Bean Oil: 11,000 pls.	176,000	Local
Soy Makers	13	18,100	——	——	Local
Brewery	13	35,000	7,930 pls.	102,820	Shanghai & Tsingtao
Dyeing	8	2,870	——	——	Local
Power Plant	1	75,000	——	——	Local

PRODUCTS

The products of Tunghai are mainly for local consumption. Those which are exported to outside markets are groundnut and salt. The annual production of salt from Tunghai, including those from Kangpu and Kuanyun, amounts to over 8,000,000 piculs. Other products, together with their quantity of output and value, are tabulated as follows:

	Output in Normal Year	Output in 1931	Price per Unit	Total Value
Non-Glutinous Rice	1,000 piculs	500 piculs	$ 5.60	$ 2,800
Glutinous Rice	70 „	50 „	6.20	310
Wheat	480,000 „	540,000 „	13.00	6,920,000
Barley	190,000 „	210,000 „	8.00	1,680,000
Buckwheat	70,000 „	80,000 „	11.00	880,000
Soya Bean	160,000 „	350,000 „	10.00	3,500,000
Black & Green Beans	250,000 „	250,000 „	9.00	2,250,000
Maize	3,200 „	3,200 „	8.00	25,600
Kaoliang	125,000 „	144,000 „	6.00	864,000
Groundnut	416,000 „	648,000 „	5.00	3,240,000
Sesamum Seed	9,500 „	17,300 „	15.00	259,500
Potato	460,000 „	500,000 „	1.00	500,000
Vegetable	12,000 „	16,000 „	1.00	16,000
"Yellow" Fish	300 „	230 „	45.00	10,350

Shih Yu (鮮 魚, *Ilisha elongata*)	6 „	10 „	50.00	500
Common perch	20 „	30 „	20.00	600
Cuttle Fish	75 „	55 „	30.00	1,650
Eel and Turtle	10 „	20 „	20.00	400
Shrimp	75 „	55 „	20.00	1,100
Crab	150 „	120 „	25.00	3,000
Other Fishes	120 „	71 „	45.00	4,560
Chicken	150,000 heads	145,000 heads	0.20	29,000
Egg	16,000,000 pcs.	16,200,000 pcs.	0.01	162,000
Cow	1,960 heads	2,200 heads	40.00	88,000
Pig	4,000 „	7,000 „	20.00	140,000
Sheep	500 „	400 „	5.00	2,000
Horse	20 „	20 „	60.00	1,200
Donkey	1,600 „	2,000 „	20.00	40,000
Mule	10 „	10 „	70.00	700
Bristle	15 pls.	15 pls.	70.00	1,050
Hide	1,100 pcs.	1,500 pcs.	6.00	9,000
Game	2,000 heads	3,000 heads	0.40	1,200
Total	——	——	——	20,634,520

COMMERCE

Cotton yarn, piece goods, brown and white sugar, match, and paper form the principal articles of imports into Tunghai, while cereals, groundnut and beancakes are the principal exports. The import of cotton yarn amounts to over 10,000 bales, and match, to 6,000 cases; while the exports for cereals and beancakes amount to 1,000,000 piculs each, and groundnut, to 700,000 piculs.

Tunghai has two banks, two native banks, and 211 commercial firms of various lines. Their total business turnover amounts to over $13,000,000. Particulars are given as follows:

	No. of Firms	Annual Business Turnover
Financial	4	$11,200,000
Cotton Cloth	27	680,000
Miscellaneous Goods	34	520,000
Express Companies	33	480,000
Groceries	35	240,000
Communication	6	200,000
Provisions	44	170,000
Fruit	22	60,000
Hotel	10	44,000
Total	215	$13,594,000

CHAPTER VII

TUNGSHAN

TUNGSHAN, or better known as Hsuchow, is located at longitude 117° 20′ E., and latitude 34° 15′ N., on the border of Shantung, Anhui and Honan provinces and crossed by the Lunghai and Tientsin-Pukow Railways. It is 120 *li* long from east to west, and 130 *li* long from north to south, with Peihsien and Suining on the east, Hsiaohsien on the west, hsien (縣) of Shantung Provinces on the north, Lingpi (靈璧) of Anhui Province on the south-east, and Fenghsien on the north-west.

The city is formed by the silt deposited by the Yellow River, and therefore, it consists chiefly of plains. The hills which are worth mentioned are the Taishan (泰山), Yunlung Shan (雲龍山) and Tiehshan (鐵山). It is watered by the Weishanhu Lake (微山湖) and Chingshanho River (荊山河) on the north, Kuiho River (奎河) on the south, and the North and South Fangtingho Rivers (南北房亭河) in the heart of the city.

The climate of Tungshan is of continental nature. The average temperature in the year is 29.8° C. and the total rainfall in the year is 793.1 mm. Being an alluvial land, the soil of Tungshan is mostly sandy, about 72 per cent and the clayey soil only occupies about 28 per cent.

AREA AND POPULATION

The total area of Tungshan is 3,669.17 square kilometers, of which 4.40 square kilometers or 0.12 per cent are urban districts, and 3,664.77 or 99.88 per cent, rural districts.

The total population of Tungshan is 986,536, including 517,493 males and 469,043 females. The density of population is 268.87 per square kilometer.

Classified according to ages, the percentages are as follows:

Age	Male	Female	Total
Under 10	9	7	16
11-30	17	15	32
31-60	22	19	41
Over 61	5	6	11
Total	53	47	100

Classified according to professions the percentages are as follows:

	Percentage
Agricultural	67.70
Industrial	9.02
Labor	3.16
Commercial	8.80
Military and Civil Service	3.92
Educational	3.03
Law and Medicine	0.17
Others	4.20
Total	100.00

COMMUNICATIONS

The communication system of Tungshan is entirely depended on railways and highways. The city is situated at the crossing point of the Lunghai and Tientsin-Pukow Railways, with the Lunghai Line running from east to west, and the Tientsin-Pukow Line from north to south. Thus, one can reach by railways to as south as Shanghai and Hangchow through the connection with Nanking-Shanghai and Shanghai-Hangchow-Ningpo Railways, as north as Peiping, and as west as Hsian (西安). The cargo chiefly transported by the railways consists of cereals and fruits, and the freight charged by the Lunghai Line is $0.50 per ton.

Among the completed highways the Hsuchow-Haichow Road, the Tungshan-Hsiaohsien Road, the Tungshan-Fenhsien Road, and the Tungshan-Suining Road are the most

important, and on these roads bus services are already in operation. Goods transported on these highways are chiefly cereals and firewood, and ox-carts are usually used for this purpose.

The city has 18 post offices one telephone company, one long-distance telephone company, and one telgraph office.

INDUSTRY

Tungshan is not an industrial city. The largest factories in the city are the Yao Hua Electric Company (耀華電氣公司) and the Pao Hsing Flour Mill (寶興麵粉廠). The Yao Hua Electric Company was established in 1919 at Tungkuan (東關), a suburb outside the East City Gate. It is equipped with two turbines, and coal is obtained from the Chung Hsing Coal Mine (中興煤鑛) in Ihsien, Shantung province. The annual consumption is about 2,500 tons. The Pao Hsing Flour Mill was established in 1921 with a capital of $200,000. It is equipped with 12 milling machines, consuming annually 180,000 piculs of wheat and producing 470,000 bags of flour. Particulars of principal industries are given as follows:—

	No. of Firms	Total Capital	No. of Workers	Output
Cotton weaving	20	——	—	$342,000
Towel	5	——	—	9,400 dozen
Hosiery	5	——	—	2,500 „
Blanket	5	——	—	2,390 pcs.
Hat	10	——	—	$ 30,800
Egg	2	$220,000	—	$630,000
Flour	1	200,000	300	——
Brewery	35	——	—	$180,000
Oil pressing	40	——	—	$320,000
Match	1	30,000	200	——
Glass	1	6,000	24	$ 13,200
Leather tanning	3	4,200	23	1,600 pcs.
Soap	5	5,000	24	16,070 cases
Power plant	1	300,000	300	——
Printing	25	23,100	113	$ 85,500
Coal mining	1	——	1,000	——

PRODUCTS

The principal products of Tungshan consists chiefly of wheat, groundnut, water melon seeds, soya beans, kaoliang, dried lily flower, and sesamum seeds. Aside from local consumption, the quantity annually shipped to outside markets amounts to seven or eight million tons. Wheat is mostly shipped to Honan and Shanghai, kaoliang, to Tsining (濟甯), Shantung province, and Chengchow (鄭州), Honan province, and soya beans, groundnut, and melon seeds, to Shanhgai and Wusih.

COMMERCE

Being a city rich in agricultural products, the commercial firms of Tungshan are chiefly composed of shops dealing in cereals. Particulars of the various lines of business are tabulated as follows:

	No. of Firms	Capital	Annual Business Turnover
Cereals	86	——	——
Hides, Furs and Bones	30	——	——
Timber	32	$68,500	——
Groceries	27	——	——
Piece Goods	40	——	——
Insurance	4	——	——
Banks	5	——	$2,000,000
Cash-Shops	5	120,000	380,000
Native Banks	5	42,000	98,000
Godowns	3	——	——

The principal articles imported into and exported from Tungshan are as follows:

IMPORTS		
Piece goods	200,000	pcs.
Cotton yarn	20,000	bales
Sugar	85,000	packages
Foodstuffs	300,000	piculs
Cigarettes	6,000	cases
Kerosene oil	200,000	tins
Tobacco leaf	18,000	packages
Rice	50,000	piculs
Coal	50,000	tons

EXPORTS	
Groundnut kernels	30,000 tons
Eggs	30,000 packages
Bean cake	5,000 tons
Sesamum seed	5,000 „
Wheat	10,000 „
Melon seed	6,000 „
Wine	2,000 jars
Cow hide	1,200 tons
Groundnut, in shell	5,000 „
Hogs	10,000 heads
Cabbage	1,000 tons

The monetary unit used in Tungshan is the copper cash. In addition to the different denominations of copper coins, which are divided into 20, 50, 100 and 200-cash pieces, copper cash notes are issued by various native banks and shops. The 20-cent silver pieces, which are very common in districts south of the Yangtse River, are very rarely seen in Tungshan.

BOOK FIVE

AGRICULTURE AND FORESTATION

CHAPTER I

RICE

RICE, being a semi-tropical plant, is abundantly cultivated in the southern provinces of China, and Kiangsu, owing to its fertile soil and communication facilities, is the leading producing district. It is the most important agricultural product of the Province, produced almost in every one of its 61 districts. The districts of Changshu, Kunshan, Wusih, Kiangyin, Wuhsien, Wuchin, Liyang, Ihsing, Sungkiang, Chuyung, Tungtai, Yencheng, Paoying, Tanyang, Chintan, Chinkiang, Huaian, Kiangtu, and Jukao are particularly noted for their rice production.

There are many varieties of rice produced in this Province, but they can be grouped under three general kinds, the *nu* (糯) or glutinous rice, the *keng* (粳) rice and the *hsien* (秈) rice. The *nu* rice is glutinous in nature, being used for making rice-wine and pastry, while the other two kinds are the human staple food.

AREA OF RICE FIELDS

The area of rice fields varies slightly every year. It will be observed that in these districts though uniformity in climate, soil, and fertility is found, on account of the difference in the methods of production, the rice output of the various districts is not proportional to the area of rice fields. Area devoted to the cultivation of non-glutinous rice, which forms the staple food, is many times that to glutinous rice. The following table, showing the area in each district of the Province, is compiled according to the results of the investigation in 1930 by Mr. Chang Hsin I (張心一) of the Legislative Yuan.

	Non-Glutinous Rice *Mou*	Glutinous Rice *Mou*
Nanhui	312,000	60,000
Sungkiang	572,000	—
Shanghai	129,000	14,000
Chinshan	205,000	37,000
Wuhsien	668,000	928,000
Kiating	188,000	43,000
Tsungming	288,000	58,000
Changshu	849,000	104,000
Kiangyin	534,000	174,000
Ihsing	951,000	81,000
Kaoshun	370,000	58,000
Kiangning	858,000	129,000
Kiangpu	136,000	36,000
Icheng	460,000	99,000
Fenghsien	73,000	24,000
Chuanshan	53,000	11,000
Tsingpu	341,000	36,000
Wukiang	547,000	182,000
Kunshan	891,000	223,000
Paoshan	165,000	12,000
Taitsang	197,000	39,000
Wusih	823,000	198,000
Wuchin	860,000	138,000
Liyang	807,000	237,000
Lishui	110,000	63,000
Chuyung	497,000	29,000
Luho	528,000	56,000
Chinkiang	490,000	60,000
Chintan	309,000	374,000
Yangchung	175,000	28,000
Kiangtu	1,198,000	—
Paoying	797,000	584,000
Huaiyin	—	—
Suchien	9,000	—
Tungshan	—	—
Tangshan	—	—
Peihsien	—	—
Shuyang	135,000	135,000
Kangyu	63,000	84,000
Lienshui	—	—
Yencheng	1,606,000	10,000
Tungtai	630,000	42,000
Tanyang	488,000	306,000
Taihsing	365,000	29,000
Kaoyu	1,394,000	107,000
Huaian	593,000	113,000
Ssuyang	50,000	—
Suining	—	—
Hsiaohsien	—	—

Fenghsien	——	——
Peihsien	——	——
Tunghai	42,000	42,000
Kuanyun	56,000	——
Founing	350,000	233,000
Hsinghua	1,253,000	——
Taihsien	781,000	62,000
Jukao	849,000	332,000
Nantung	925,000	——
Chitung	42,000	42,000
Tsingkiang	430,000	47,000
Haimen	225,000	32,000
Total	25,917,000	5,985,000

RICE OUTPUT

Generally speaking, rice is amply produced in every district of this Province, but those south of the Yangtse, owing to more fertile soil and denser population, produce more than the northern districts. The following table, showing the rice output in each district, is obtained through our investigation made in September, 1932.

	Non Glutinous Rice	Glutinous Rice	Total
Nanhui	653,640	66,870	720,510
Sungkiang	1,500,300	1,500	1,501,800
Shanghai	334,340	29,510	363,850
Chinshan	440,000	110,000	550,000
Wuhsien	1,995,448	589,548	2,584,996
Kiating	170,315	42,579	412,894
Tsungming	721,000	180,000	901,000
Changshu	2,500,000	500,000	3,000,000
Kiangyin	1,334,000	334,000	4,668,000
Fenghsien	294,000	880	294,880
Chuansha	120,000	10,000	130,000
Tsingpu	1,098,960	43,380	1,142,340
Wukiang	2,250,000	250,000	2,500,000
Kunshan	1,321,259	64,181	1,385,440
Paoshan	165,900	51,500	217,400
Taitsang	4,000,000	30,000	430,000
Wusih	2,600,100	100,000	2,700,100
Wuchin	1,600,000	100,000	1,700,000
Ihsing	3,928,460	329,670	4,258,130
Kaoshun	1,300,000	80,000	1,380,000
Kiangning	3,600,000	120,000	3,720,000
Kiangpu	450,000	20,000	470,000

Icheng	500,000	2,000	502,000
Chintan	730,000	800,000	1,530,000
Yangchung	400,200	5,500	451,700
Kiangtu	3,472,000	244,800	3,716,800
Paoying	1,365,100	794,640	2,159,750
Huaiyin	—	—	—
Suchien	2,600	—	2,600
Tungshan	4,500	—	4,500
Tangshan	—	—	—
Peihsien	—	—	—
Liyang	3,004,760	750,600	3,755,360
Lishui	1,200,000	20,000	1,220,000
Chuyung	1,583,369	234,573	1,817,942
Luho	416,000	4,200	420,200
Chinkiang	288,000	96,000	384,000
Tanyang	949,220	636,860	1,586,080
Taihsing	620,000	—	620,000
Kaoyu	500,000	400,000	900,000
Huaian	1,087,000	158,100	245,100
Ssuyang	—	—	—
Suining	—	—	—
Hsiaohsien	—	—	—
Fenghsien	—	—	—
Peihsien	—	—	—
Shuyang	—	—	—
Kangyu	86,900	115,900	204,800
Lienshui	—	—	—
Yencheng	2,462,100	14,800	2,476,900
Tungtai	924,000	61,600	985,600
Jukao	1,510,400	590,900	2,101,300
Nantung	800,000	235,000	1,035,000
Chitung	20,000	—	20,000
Tunghai	180,000	61,900	241,900
Kuanyun	116,900	—	116,900
Founing	550,000	100,000	250,000
Hsinghua	—	163,382	163,382
Taihsien	1,250,100	90,400	1,340,500
Tsingkiang	455,500	211,000	666,700
Haimen	52,000	7,800	59,800
Total	57,208,171	8,899,573	66,107,744

The method of rice production and implements used are still of a very conservative and crude type. It is true that agricultural machinery has been introduced in some places, but in most cases they are used only for experimental purposes. Artificial fertilizers, however, began to gain popularity among the farmers, as shown by the increasing imports of this article, but the effects they produce on crops remained to be seen.

The natural environments, such as fertility and climatic condition, of various districts in this Province are quite uniform, as there are few mountain ranges and great rivers in the Province. Although socially and economically, the districts north of Yangtse are quite different from those south, there is not much difference in the way of raising agricultural crops. In general, there are two crops in a year, the summer and the winter, the summer crop consisting mainly of wheat and other cereals, while the winter crop, principally rice. The sowing of rice begins in April and ends in May. A month after sowing, seedlings are transplanted. As the period of maturity differs with each variety of rice, the harvesting time ranges from September to November.

After rice is harvested, the grain is beaten off from the stalks by human labor. The stalks are used as fuel or made into a kind of very rough paper used for constructional purpose. The paddy, after being dried in the sun, are unhulled in a wooden machine and then sold to the rice *hong*. The rice *hong* send the rice to rice mills, where it is unhusked at a charge of about 20 cents per picul. Both machinery and human labor are used in rice milling, but the cost of machinery is usually higher than that of human labor.

CONSUMPTION AND MARKETING

As Kiangsu is the most populous province in the country, only a few districts are able to export rice to other parts of the country, despite the voluminous annual output. But these rice exporting districts are not necessarily self-supplying, because, several districts, like Wusih and Wuhsien, owing to their transportation facilities, are the centers of rice trade in the Province, where rice from neighboring localities are collected and re-exported to Shanghai though their own annual output can scarcely meet local demand. In other districts like Wuchin and Tanyang, where only about 70 per cent of the *keng* rice produced is consumed locally, exports are made because people in these districts take *hsien* rice produced in other places as their staple food on account of the lower prices of the *hsien* rice. The following table shows the percentage of the rice output consumed locally in each district of the Province.

Nanhui	100	——
Sungkiang	40	Shanghai
Shanghai	100	——
Chinshan	50	Shanghai
Wuhsien	100	——
Kiating	100	——
Tsungming	100	——
Ohangshu	70	Shanghai, Chinkiang, Nanking.
Kiangyin	75	Wusih, Wuchin.
Ihsing	80	Wusih, Shanghai.
Kaoshun	100	——
Kiangning	80	Nanking
Kiangpu	100	——
Icheng	100	——
Chintan	100	——
Fenghsien	100	——
Chuansha	100	——
Tsingpu	60	Shanghai
Wukiang	50	Shanghai
Kunshan	80	Shanghai
Paoshan	100	——
Taitsang	100	——
Wusih	100	——
Wuchin	60	Wusih
Liyang	50	Wusih
Lishui	60	Nanking
Chuyung	70	Nanking, Chinkiang.
Luho	100	——
Chinkiang	100	——
Tanyang	90	Wuchin, Shaohing.
Yangchung	100	——
Kiangtu	70	——
Paoying	70	Wusih, Huaiyin.
Huaiyin	——	——
Suchien	100	——
Tungshan	——	——
Tangshan	——	——
Peihsien	——	——
Shuyang	——	——
Kangyu	100	——
Lienshui	——	——
Yencheng	70	Taihsien
Tungtai	60	Nantung
Jukao	100	——
Taihsing	90	Districts south of Yangtse.
Kaoyu	80	Taihsien, Tungtai, Huaian Huaiyin.
Huaian	90	Tsingkiang, Paoyin, Kaoyu.
Ssuyang	——	——
Suining	——	——
Hsiaohsien	——	——

Fenghsien	—	—
Peihsien	—	—
Tunghai	100	—
Kuanyun	100	—
Founing	70	Lienshui, Kuanyun.
Hsinghua	100	—
Taihsien	100	—
Tsingkiang	100	—
Nantung	100	—
Chitung	100	—
Haimen	100	—

It will be observed that the principal market for the surplus rice of most districts in the Province is Shanghai with Wusih, Chinkiang, Kiangning, Wuchin and Chekiang cities following. Shanghai, in addition to being the most populous city in the country, is the principal port through which rice is exported to other provinces.

There are two groups of rice merchants in Shanghai, the Northern and the Southern, the latter consisting of merchants from Sunkiang, Minghong (閔行), Tungli (同里), Pingwang (平望), Lutang (盧塘), Ssuching (泗涇), Chingpu (青浦), Changyen (張堰) and Pachih (坝坎), while the former is composed by those from Wuhsien, Kunshan, Changshu, Wuchin, Kiangyin, Wusih, Ihsing, Liyang and Chintan. The rice junks owned by the Southern Group usually anchor at Nantao, while those of the Northern Group always stop at Chapei. They sell to different groups of customers at different prices.

Kiangning, Chinkiang and Wusih are also important rice markets in the Province, though in a much smaller scale than Shanghai.

TRANSPORTATION

As there are numerous waterways in this Province, rice is mostly transported by junks, though wheelbarrow and pack animals are occasionally used. In recent years, though there are several railways and highways in this Province, transportation by water is still the cheapest and most convenient.

Junks carrying rice for the Southern Group stop at Huangchiatu (黃家渡), Nantao, while those of the Northern Group stop at Sinza Bridge (新閘橋).

The rice junks are of two sizes, the larger one is capable of carrying a load of more than 300 piculs of rice, the smaller, about 160 piculs, freight charge being fixed according to the distance. The following table shows the freight and number of days required to transport rice from various localities to Shanghai.

	Distance from Shanghai (Li)	No. of Days Required Favorable Wind	Unfavorable Wind	Freight per picul. (Dollar)
Chinshan	150	2	4	.16
Sungkiang	130	1	3	.13
Ssuching	100	1	2	.12
Minghong	60	0.5	—	.09
Tungli	190	2	4	.15
Pingwang	180	2	4	.15
Tsingpu	70	1	1.5	.10
Fengchin (楓涇)	130	1	3	.14
Changshu	210	3	4	.17
Wusih	300	4	5	.23
Wuhsien	240	3	4	.18
Kiangyin	350	4	6	.25
Wuchin	360	4	6	.25
Chintan	380	5	7	.28
Liyang	360	5	7	.28

TRADE CONDITIONS

The price of rice paddy varies considerably in various producing districts. Generally, in those districts near the principal rice markets, the prices are higher, while in those farther away, the prices are much lower, as it costs much to bring the rice to the markets.

The price of rice paddy is generally below four dollars per picul in producing districts, it never exceeds $4.50 per picul at its highest. The *nu* rice paddy commands a comparatively higher price, which however, rarely goes beyond $4.50. The price is much lower in districts north of the Yangtse. The following table shows the prices of the *nu*, *hsien* and *keng* rice paddy in various districts of this Province.

	Non-Glutinous Rice	Glutinous Rice
Nanhui	5.5	5
Sungkiang	4.5	5.5
Shanghai	4.5	5
Chinshan	4.5	5
Wuhsien	4	—
Kiating	4.5	5
Tsungming	3	4
Changshu	4.5	4.5
Kiangyin	4	5
Ihsing	3	4
Kaoshun	3	4
Kiangning	3	3.2
Kiangpu	4	4
Icheng	3	4
Chintan	4	5
Yangchung	3.5	4
Fenghsien	4.5	5
Chuansha	4	5
Tsingpu	4.5	5
Wukiang	3.5	4
Kunshan	4	4.5
Paoshan	4.5	4.5
Taitsang	4.5	4.5
Wusih	4.5	5
Wuchin	4.5	5
Liyang	2.8	3
Lishui	2.8	3
Chuyung	4	4
Luho	4	4
Chinkiang	4	4.5
Tanyang	4	5
Taihsing	3.5	4
Kiangtu	3	—
Paoying	3	4
Huaiyin	—	—
Suchien	—	—
Tungshan	—	—
Tangshan	—	—
Peihsien	—	—
Shuyang	—	—
Kangyu	4	—
Lienshui	—	—
Yencheng	3.5	4
Tungtai	3	3.2
Jukao	4	5
Nantung	4	4.5
Kaoyu	3	4
Huaian	2.6	8

Ssuyang	—	—
Suining	—	—
Hsiaohsien	—	—
Fenghsien	—	—
Peihsien	—	—
Tunghai	2.8	4
Kuanyun	4	—
Founing	2.9	3
Hsinghua	3.5	3.5
Taihsien	3.2	4.8
Tsiangkiang	4	6
Haimen	4.5	4.6
Chitung	3	—

The following table shows the average prices of white *keng* rice in Shanghai during the last twenty years:

	January	June	December
1912	7.47	9.47	7.02
1913	7.54	7.01	6.59
1914	6.30	5.93	6.63
1915	6.35	7.64	6.28
1916	6.52	7.56	6.08
1917	6.40	6.87	6.25
1918	6.51	6.36	6.08
1919	6.31	6.64	6.86
1920	7.57	10.62	8.27
1921	8.90	10.25	9.99
1922	9.81	11.81	10.11
1923	11.01	11.52	10.38
1924	9.87	9.73	9.14
1925	9.26	10.85	12.67
1926	12.94	16.29	15.41
1927	17.20	17.95	10.34
1928	12.15	12.30	12.02
1929	13.47	14.17	15.19
1930	16.59	20.05	11.84
1931	11.87	12.66	12.39

The rice trade is quite complicated in nature. To a considerable extent it is controlled by the rice *hongs*, which collected un-husked rice from the farmers and after having it milled into white rice, sell it to purchasers from other provinces or export it directly. Usually, the farmers come to these *hongs* to sell their rice, but not infrequently, a rice *hong* advances a certain sum of money to a farmer before

harvesting time, just when he is needing money badly, on the security of his crop. The farmer contracts to sell his crop to the rice *hong* at the market price.

There are many rice *hongs* in this Province, as shown by the following table:

	No. of Rice Hongs		No. of Rice Hongs
Nanhui	42	Paoying	384
Shanghai	73	Suchien	76
Wuhsien	151	Tangshan	11
Tsungming	58	Peihsien	2
Kiangyin	227	Kangpu	3
Kaoshun	101	Yencheng	513
Kiangpu	104	Jukao	108
Chingtan	62	Chitung	80
Kiangtu	481	Peihsien	76
Fenghsien	11	Hsinghua	498
Tsingpu	36	Tsingkiang	84
Kunshan	79	Liensui	22
Taitsang	76	Tungtai	158
Wuchin	239	Nantung	47
Lisui	60	Tunghai	30
Luho	46	Taihsien	633
Tangyang	110	Haimen	32
Kaoyu	232	Chuansha	3
Ssuyang	42	Wukiang	45
Hsiaohsien	6	Paoshan	14
Sungkiang	106	Wusih	101
Chinshan	49	Chuyung	131
Kiating	63	Chingkiang	121
Changshu	235	Taihsing	166
Ihsing	75	Huaian	168
Kiangning	137	Suining	26
Icheng	43	Fenghsien	18
Yangchung	21		

Interior rice *hongs* rarely export rice directly. Merchants from cities go to various farms and collect a certain amount of rice which he transports by junks to the central markets, where it is sold to rice *hongs* through rice brokers. When a junk of rice arrives at a city, the

brokers are notified of the fact. These brokers take samples of the goods and send them to rice *hongs*. If a rice *hong* has received order to buy from some customer, a man is then sent to fix the price with the broker and the owner. The price is paid after rice is measured and delivered. The broker charges a commission of 3 to 5 cents, the rice *hong*, about 20 cents per picul.

DEMAND AND SUPPLY

Although China is an agricultural country and rice her principal crop, few of the rice producing centers have surplus to sell in addition to local consumption. The provinces of Szechuen and Hupeh make small exports in years when the crop is good. The province of Chekiang, despite of its fame as a rich rice producing center, usually imports a considerable quantity of rice from other provinces owing to its dense population. The provinces of Kuangtung, Kuangsi, Yunnan, Fukien, and Kuichow are largely dependent upon imported rice to feed their population. Only Hunan, Kiangsi, Anhui and this Province are able to export to other provinces to a limited extent.

Kiangsu, though exporting some rice to other parts of the country, imports a considerable amount of rice from other provinces and abroad. In fact, it imports more than exports, as over one-third of its districts do not produce enough rice for local consumption. Only Tsingpu, Wukiang, Kunshan, Wusih and Chintan have some surplus to sell.

Most of the rice imported into this Province comes from abroad, namely, India, Burma, French-Indo-China, Siam and Japan, though a much smaller quantity comes from Wuhu, Kiukiang, Hankow, Changsha and Anking. The home product, owing to its comparatively higher price, can not compete with foreign products. In 1932, when the price of rice was so low in China that farmers in some places left their crop to rot in the fields, the rice imports from those foreign countries were still quite considerable. The following table shows the quantity and value of foreign rice imported into this Province during the last three years:—

	1929		1930		1931	
	piculs	Hk. Tls.	piculs	Hk. Tls.	piculs	Hk. Tls.
Nanking	134	994	496,183	3,444,800	40,452	362,379
Chinkiang	1,203	5 206	425,275	2,534,009	672	3,097
Shanghai	492,073	2,227,612	7,138,406	44,929,823	837.083	4,261,724
Soochow	——	——	504	3,600	——	——
Total	493,410	2,233,812	8,060,623	53,712.232	887,207	4,527,200

CHAPTER II

WHEAT

ALTHOUGH wheat is produced in this Province in much smaller quantity as compared with rice, the annual output is still quite considerable, and Kiangsu is regarded as one of the important wheat producing centers of the country. In this Province, the districts of Paoying, Nantung, Tungtai, Kaoshun, Taihsing, Yencheng, Kiangyin, Haimen, Shuyang, Jukao, Huaian and Tungshan are noted for their wheat production. Jukao, Kiangyin, Changshu, and Haimen also produce a considerable quantity of barley, while Jukao, Chintan and Wukiang are the principal centers of rye production. There are about a hundred species of wheat, barley and rye.

AREA OF WHEAT FIELDS

The area of fields in this Province under cultivation of wheat is almost double that of rice. According to the investigations of the Legislative Yuan made in 1930, the area of wheat and barley fields in Kiangsu was 64,337,000 *mou* as against 31,902,000 *mou* of rice fields. The land devoted to the cultivation of barley is much less in area than that used for wheat, while area for rye is still smaller. The following table shows the areas of wheat, barley and rye fields in each district of this Province:

	Wheat Fields (*mou*)	Barley Fields (*mou*)	Rye Fields (*mou*)
Nanhui	588,000	60,000	——
Sungkiang	202,000	106,000	——
Shanghai	305,000	102,000	——
Chinshan	19,000	19,000	——
Wuhsien	1,021,000	186,000	——
Kiating	346,000	224,000	——
Tsungming	184,000	541,000	——
Changshu	728,000	208,000	——
Kiangyin	746,000	174,000	——
Ihsing	870,000	194,000	170
Kaoshun	303,000	96,000	——

Kiangning	501,000	629,000	200
Kiangpu	200,000	45,000	—
Icheng	337,000	328,000	—
Chintan	365,000	44,000	—
Yangchung	63,000	109,000	—
Kiangtu	1,219,000	577,000	86,587
Paoying	797,000	390,000	9,889
Fenghsien	122,000	122,000	—
Chuansha	85,000	30,000	—
Tsingpu	52,000	52,000	—
Wukiang	638,000	46,000	50
Kunshan	851,000	223,000	—
Paoshan	306,000	31,000	—
Taitsang	331,000	126,000	—
Wusih	1,076,000	190,000	—
Wuchin	1,376,000	258,000	206
Liyang	584,000	584,000	—
Lisui	316,000	132,000	—
Chuyung	417,000	88,000	—
Luho	417,000	371,000	—
Chingkiang	497,000	151,000	—
Tanyang	590,000	397,000	—
Taihsing	701,000	204,000	—
Kaoyu	1,137,000	493,000	—
Huaian	1,460,000	649,000	225
Huaiyin	798,000	290,000	103
Suchien	465,000	103,000	—
Tungshan	2,351,000	392,000	—
Tangshan	993,000	86,000	20
Peihsien	754,000	109,000	200
Shuyang	1,485,000	371,000	9,750
Kangyu	1,505,000	190,000	—
Lienshui	897,000	617,000	100
Yencheng	453,000	1,091,000	198
Tungtai	945,000	63,000	—
Jukao	1,660,000	1,143,000	1,640
Nantung	666,000	2,183,000	1,114
Chitung	104,000	614,000	—
Ssuyang	1,213,000	396,000	—
Suining	746,000	142,000	—
Hsiaohsien	1,355,000	226,000	200
Fenghsien	1,050,000	113,000	—
Peihsien	1,057,000	42,000	—
Tunghai	861,000	315,000	—
Kuanyun	751,000	751,000	—
Founing	466,000	1,165,000	12
Hsinghua	771,000	674,000	67
Taihsien	1,028,000	493,000	—
Tsingkiang	355,000	505,000	380
Haimen	193,000	1,206,000	—
Total	42,127,000	22,210,000	110,994

ANNUAL OUTPUT

The annual output of wheat, barley and rye varies with the weather conditions of each year. During ordinary years, a *mou* of land yields from 50 to 230 catties of wheat, the difference being caused by different soil. Similarly, the annual yield per *mou* of barley ranges from 50 to 210 catties, that of rye, from 50 catties to 220 catties. The following table shows the average yield per *mou* of wheat, barley and rye in each district of this Province:

	Wheat Catties	Barley Catties	Rye Catties
Nanhui	150	120	130
Sungkiang	110	130	120
Shanghai	130	120	100
Chinshan	133	—	60
Wuhsien	119	70	—
Kiating	120	120	110
Tsungming	156	115	124
Changshu	130	110	130
Kiangyin	180	—	—
Ihsing	110	90	80
Fenghsien	135	120	128
Chuansha	220	180	—
Tsingpu	220	180	—
Wukiang	120	—	100
Kunshan	—	—	—
Paoshan	210	200	220
Taihsan	140	100	150
Wusih	180	—	—
Wuchin	123	150	130
Liyang	53	53	—
Kaoshun	96	85	—
Kiangning	169	135	170
Kiangpu	126	60	—
Icheng	100	75	—
Chintan	53	—	—
Yangchung	200	180	220
Kiangtu	160	120	140
Paoying	108	168	230
Huaiyin	72	160	120
Suchien	—	—	—
Tungshan	—	—	—
Tangshan	110	150	140
Peihsien	80	120	—
Shuyang	85	52	136

Lishui	65	80	84
Chuyung	53	53	—
Luho	85	56	—
Chinkiang	88	64	108
Tanyang	53	—	—
Taihsing	210	180	220
Kaoyu	128	120	—
Huaian	180	200	240
Ssuyang	—	—	—
Suining	64	72	49
Hsiaohsien	70	110	90
Fenghsien	80	120	—
Peihsien	80	90	—
Tunghai	160	—	—
Kangyu	124	95	—
Lienshui	60	90	60
Yencheng	180	170	210
Tungtai	180	170	210
Jukao	185	210	136
Nantung	240	—	90
Chitung	171	160	162
Kuanyun	160	—	—
Founing	160	120	120
Hsinghua	80	75	96
Taihsien	180	170	210
Tsingkiang	140	120	80
Haimen	180	—	90

According to our investigation conducted last year, the total annual output of wheat in this Province amounted to 26,824,637 piculs while an investigation conducted by the Legislative Yuan in 1930 puts the figure at 36,948,300 piculs, and an estimate made by Kiangsu wheat merchants, stated that the annual output of wheat in this Province during the year was over fifteen million piculs.

The barley output of the Province is smaller than that of wheat. According to our investigation last year, it amounted to 13,957,971 piculs, while according to an investigation made by the Legislative Yuan in 1930 the barley output of that year was 21,378,340 piculs.

The output of rye is the smallest among the three, amounting to 9,046,967 piculs in 1932.

The following table shows the output of wheat, barley and rye in each district of this Province during 1932.

	Wheat Piculs	Barley Piculs	Rye Piculs
Nanhui	198,375	136,406	—
Sungkiang	150,000	100,000	—
Shanghai	414,210	101,520	—
Chinshan	20,000	2,000	—
Wuhsien	65,028	30,641	2,926
Kiating	210,266	39,425	42,053
Fenghsien	126,000	140,000	280,000
Chuansha	100,000	80,000	—
Tsingpu	37,017	6,940	—
Wukiang	140,000	—	—
Kunshan	359,411	34,390	21,394
Paoshan	51,200	38,400	25,600
Tsungming	28,000	10,000	30,000
Changshu	20,000	10,000	40,000
Kiangyin	350,000	200,000	70,000
Ihsing	1,339,800	127,000	—
Kaoshun	300,000	1,200	—
Kiangning	20,000	50,000	100
Kiangpu	70,000	30,000	—
Icheng	160,000	20,000	—
Chinshan	200,000	55,000	—
Yangchung	40,000	120,000	—
Kiangtu	1,883,300	441,709	—
Paoying	950,000	200,000	—
Huaiyin	289,600	142,300	63,400
Suchien	650,000	133,000	50,000
Taitsang	200,000	5,000	50,000
Wusih	400,000	20,000	—
Wuchin	700,000	200,000	100,000
Liyang	233,181	47,000	19,000
Lishui	320,000	300,000	—
Chuyung	167,189	211,114	58,642
Luho	248,000	228,000	5,750
Chinkiang	448,000	112,000	—
Tanyang	123,660	288,520	20,000
Taihsing	260,000	260,000	520,000
Kaoyu	900,000	300,000	—
Huaian	878,000	422,000	72,900
Ssuyang	400,000	200,000	40,000
Suining	430,000	140,000	—
Tungshan	1,797,600	32,100	2,560
Tangshan	449,460	6,129	—
Peihsien	709,000	8,260	—
Shuyang	700,000	300,000	—

Kangyu	400,000	7,200	——
Lienshui	1,285,100	492,000	98,410
Yencheng	300,000	500,000	7,000
Tungtai	96,750	1,806,000	387,000
Jukao	3,022,287	3,995,032	4,734,383
Nantung	296,650	——	1,186,600
Chitung	40,000	120,000	27,000
Hsiaohsien	1,700,000	96,000	30,000
Fenghsien	396,000	79,200	15,000
Peihsien	440,000	120,000	——
Tunghai	540,000	210,000	800,000
Kuanyun	30,000	10,000	——
Founing	30,000	100,000	5,000
Hsinghua	300,000	100,000	——
Taihsien	200,000	550,000	250,000
Tsingkiang	135,728	830,554	90,000
Haimen	75,125	1,911	667,248
Total	26,824,637	13,957,971	9,046,967

Wheat cultivated in this Province is of the "winter" variety, as sowing usually takes place in winter, usually in the months of October and November. It is harvested in the months of May and June in the following year. After the harvest, the land is turned into rice fields until winter. Thus wheat and rice are cultivaetd alternately.

CONSUMPTION AND MARKETING

Wheat is mostly made into flour by flour mills, while barley and rye are used in brewing and as animal feed. Consequently, a considerable quantity of wheat is collected in places where there are flour mills, but barley and rye are mostly consumed locally.

A study of the output of wheat in each district of this Province reveals the fact that though it is abundantly produced, a very high percentage of it is consumed locally. Very little barley is sold out of its producing districts, while rye is almost invariably consumed locally. The following tables shows the percentage of wheat output consumed locally in each district of this Province and the principal markets for the surplus.

	Percentage of Wheat Output Cousumed Locally	Market for Surplus	Percentage of Barley Output Cousumed Locally	Market for Surplus	Percentage of Rye Output Cousumed Locally	Market for Surplus
Nanhui	70	Shanghai	100	——	—	——
Fenghsien	50	Shanghai	50	Shanghai	100	——
Sungkiang	100	——	100	——	—	——
Chuansha	20	Shanghai	40	Shanghai	—	——
Shanghai	100	——	100	——	—	——
Tsingpu	100	——	100	——	—	——
Chinshan	100	——	100	——	—	——
Wukiang	90	Wuhsien	—	——	—	——
Wuhsien	40	Shanghai, Wusih	50	Wusih, Shanghai	90	Wuhsien
Kunshan.	60	Shanghai	100	——	100	——
Kiating	30	Shanghai,Wusih	100	——	100	——
Paoshan	50	Shanghai	100	——	100	——
Tsungming	30	Wusih, Shanghai	70	Wusih, Shanghai	100	——
Taitsang	10	Shanghai, Wusih	100	——	10	Wusih
Changshu	40	Shanghai, Wusih, Wuhsien	100	——	100	——
Wusih	90	Shanghai	100	——	—	——
Wuchin	70	——	100	——	100	——
Ihsing	90	Neighboring Districts	100	——	100	——

Liyang	60	Wusih	100	——	—	——
Kaoshun	50	Shanghai, Wusih	100	——	100	——
Lisui	80	Kiangtu	85	Kiangtu	—	——
Kiangning	10	Kiangning	40	Nanking	50	Nanking
Chuyung	25	Chinkiang	90	Chingkiang	—	——
Kiangpu	40	Nanking	100	——	—	——
Luho	20	Wusih, Nanking	25	Changchow, Wusih	100	——
Kiangyin	30	Wusih	100	——	100	——
Icheng	90	Shanghai	70	Neighboring Districts	—	——
Chinkiang	90	Shanghai	100	——	—	——
Chintan	60	Wusih	90	Wusih	—	——
Tanyang	40	Shanghai, Wusih	50	Changchow, Wusih	—	——
Yangchung	100	——	100	——	—	——
Taihsing	90	Shanghai	100	——	—	——
Kiangtu	80	Neighboring Districts	100	——	—	——
Kaoyu	30	Shanghai, Wusih, Nantung	30	Taihsien	—	——
Paoying	90	Tsingkiang	98	Tsingkiang, Paoying	70	Kaoyu
Huaian	70	Tningkiang, Kaoyu	100	——	100	——
Huaiying	50	Tsingtao	100	——	100	——
Ssuyang	30	Wusih, Chinkiang	100	——	100	——
Suchien	85	Shanghai, Shantung	90	Neighboring Districts	100	——

Suining	60	Kiangning, Tungshan	100	——	—	——
Tungshan	45	Shanghai, Shantung	100	——	100	——
Hsiaohsien	70	Suchow	90	Tungshan	100	——
Tangshan	60	Shanghai, Suchow	100	——	—	——
Fenghsien	65	Shantung	100	——	100	——
Peihsien	50	Shanghai, Tungshan	80	——	—	——
Peihsien	65	Tungshan	100	——	—	——
Shuyang	80	Kuangun	60	Kuanyun	—	——
Tunghai	80	Singpu (新浦)	90	Singpu	100	——
Kuanyun	30	Shantung	100	——	—	——
Lienshui	90	Neighboring Districts	100	——	100	——
Founing	100	——	100	——	—	——
Yencheng	20	Kiangyen (姜堰)	50	Kiangyen	70	Neighboring Districts
Hsinghua	100	——	100	——	—	——
Tungtai	100	——	20	Nantung, Taihsien	100	——
Taihsien	100	——	100	——	100	——
Jukao	60	Nantung	100	——	100	——
Tsingkiang	60	Wusih	100	——	100	——
Nantung	100	——	100	——	100	——
Haimen	80	Neighboring Districts	100	——	90	Neighboring Districts
Chitung	50	Kiangnan	100	——	100	——

Although a small part of wheat produced in this Province is sold to Tungshan and Tsingtao, Shanghai is by far the most important market for Kiangsu wheat, with Wusih and Chinkiang next. Shanghai is the center of the flour milling industry in the Province, where most of the surplus wheat from various districts is turned into flour, while wheat bran furnishes the raw material for gourmet powder. The wheat markets of other districts are insignificant in comparison with that of Shanghai.

Most of the barley and rye produced in various districts of this Province is consumed locally. Shanghai and Wusih are the principal markets for the little surplus of a few districts.

In addition to wheat produced in the Province very considerable quantities of wheat come from provinces of Hupeh, Honan, and Auhui, and from the United States, Canada, Australia and Soviet Russia.

TRANSPORTATION

The transportation of wheat from its producing districts to Shanghai is the most important, as only small quantities are traded between other districts, and, on account of the short distances, boats, wheelbarrows, or even human power are used to carry wheat in such inter-district transportation.

Wheat is transported to Shanghai in junks, boats, steam-boats and trains, steam-boats being most frequently used. Railways are rarely used for this purpose on account of the high cost. The freight of transporting a picul of wheat to Shanghai varies from a few cents to about one dollar in accordance with the distance.

	Price per picul
Pootung	$012
Kiating	0.16
Chisuyen (戚墅堰)	0.24
Tanyang	0.30
Taitsang	0.20
Wusih	0.22

Chinkiang	0.64
Tungshan	1.20
Chunghsing (崇興)	1.20
Changshu	0.22
Tsingpu	0.20
Liyang	0.45
Tungtai	0.63
Paoshan	0.14
Wukiang	0.20
Weiting (唯亭)	0.20
Kunshan	0.20
Wuhsien	0.20
Wuchin	0.25
Kiangning	1.40
Yaowan (窯灣)	1.20
Founing	0.60
Ssuyang	1.10
Kiangyin	0.31
Taihsien	0.55
Hsinghua	0.70
Kiangtu	0.52
Mapengwan (馬棚灣)	0.64
Huaicheng (淮城)	0.85
Nantung	0.45
Suchien	1.25
Taihsing	0.50
Tsaoho (皂河)	1.15
Ihsing	0.48
Huangchiao (黃橋)	0.50
Shaopo (邵伯)	0.58
Tsingkiang	0.95
Yencheng	0.78
Icheng	0.50
Paoying	0.74
Yangchuang (楊莊)	—
Luho	0.56
Puchen (浦鎮)	0.35
Penglai (蓬萊)	0.22
Penniu (奔牛)	0.22
Sungkiang	0.22
Chiangpa (蔣壩)	0.80
Chiangyen (姜堰)	0.50
Fanshui (汎水)	0.70
Chentung (溱潼)	0.62
Tienchang (天長)	0.68
Kaoyu	0.62

TRADE CONDITIONS

On account of the difference in quality and the standards of measurement, the price of wheat varies considerably in various producing districts, ranging from $3 or $4 per picul in some districts to about $10 in others. The following table shows the prices (per picul) of wheat, barley and rye in each district of this Province.

	Wheat	Barley	Rye
Nanhui	$3.20	$3.20	$ —
Sungkiang	4.00	2.00	—
Shanghai	6.00	4.00	—
Chinshan	6.00	5.00	—
Fenghsien	4.00	2.80	3.50
Chuansha	3.20	3.00	—
Tsingpu	4.50	3.00	—
Wukiang	5.00	—	—
Wuhsien	6.50	6.50	—
Kiating	6.50	3.50	6.00
Tsungming	5.00	3.00	5.00
Changshu	5.00	3.00	4.00
Kiangyin	6.00	4.00	4.00
Ihsing	6.20	4.00	—
Kaoshun	6.00	3.00	—
Kiangning	5.00	3.00	2.00
Kiangpu	6.00	3.00	—
Icheng	5.50	3.00	—
Chintan	6.00	3.50	—
Yangchung	5.50	5.00	—
Kiangtu	7.00	3.50	—
Paoying	6.00	3.00	—
Kunshan	6.30	3.00	5.50
Paoshan	5.00	4.00	4.00
Taitsang	6.20	5.00	6.00
Wusih	5.50	3.50	—
Wuchin	5.10	3.50	7.00
Liyang	6.00	5.00	2.00
Lishui	5.00	2.00	—
Chuyung	5.00	5.00	3.00
Luho	7.00	4.00	4.50
Chinkiang	5.00	2.50	—
Tanyang	7.00	4.00	3.50
Taihsing	7.00	5.00	7.00
Kaoyu	6.00	3.00	—
Huaian	5.00	2.50	4.00
Huaiyin	3.00	4.00	—
Suchien	10.00	6.00	7.00
Tungshan	7.00	3.00	5.00
Tangshan	4.00	2.00	—
Peihsien	4.00	3.00	—

Shuyang	6.00	3.00	2.00
Kangyu	4.50	3.30	—
Lienshui	6.00	4.00	5.00
Yencheng	7.00	4.50	5.50
Tungtai	6.50	4.00	6.20
Jukao	7.00	7.00	7.00
Nantung	6.00	—	6.00
Chitung	5.00	4.00	6.00
Ssuyang	6.00	4.50	4.00
Suining	10.00	6.00	—
Hsiaohsien	6.00	4.00	4.50
Fenghsien	5.40	3.50	4.50
Peihsien	10.00	5.00	—
Tunghai	10.00	8.00	10.00
Kuanyun	4.00	2.50	—
Founing	3.00	3.00	3.00
Hsinghua	7.00	4.00	—
Taihsien	6.70	4.00	6.80
Tsingkiang	7.00	6.00	4.00
Haimen	6.20	5.80	6.00

Though the market price of wheat differs considerably from that in the producing districts, the difference is not so great as in the case of rice. Wheat transported to Shanghai by railway is higher in price, the increase, however, is only 20 or 30 per cent as compared with the price in producing districts. The following table shows the price (in taels) of wheat transported by railways to Shanghai during the period from 1926 to 1930.

	January	June	December	Annual Average
1925	——	——	4,650	4,170
1926	4,880	4,100	4,830	4,620
1927	4,870	4,800	4,080	4,590
1928	4,250	3,975	4,425	4,240
1929	4,485	3,875	4,675	4,290
1930	4,925	5,100	4,350	4,919

In this Province, wheat is collected in two ways, (1) through provision firms, and (2) through the purchasing agencies established by flour mills.

1. **Provision Firms.**—Dealings in wheat are only a part of the business of a provision firm. In May, these firms send agents to farms and villages to buy wheat from farmers. When an enough amount is collected. It is transported to Shanghai either in junks or by railway.

2. **Purchasing Agencies of Flour Mills.**—Mills of larger size usually have their own purchasing agents. For instance, the Mou Hsin (茂新), Fu Hsin (福新), and Shun Hsin (申新) flour mills have purchasing agents in Wuhsien, Chinkiang, Kaoyu and Kiangyin. Sometimes these agents send men to buy from farmers, while in other cases farmers bring their product to these agents.

Wheat collected by the provision firms are monthly sold to the flour mills. Transactions are either spot or forward. In spot transactions, a firm sends some sample to a mill and the price is fixed between them. After a second sample is taken by the mill, the deal is concluded if it corresponds to the first sample. Forward transaction are made one week, one month, two months or three months before delivery, while actual payment takes place from 8 days to a month after delivery. Not infrequently, a firm sell wheat to other firms. In such cases the wheat is weighed within ten days after the price is agreed upon. In selling to purchasing agents from other places, forward transactions are limited to imported wheat. The transactions in the Shanghai Produce Exchange are more or less speculative in nature.

The trade in barley and rye is usually quite small in scale.

DEMAND AND SUPPLY

As only a small portion of wheat produced by Kiangsu farmers is for their own use, most of it is transported from the producing districts to places were there are many flour mills. Generally, most districts of this Province have surplus wheat to sell in addition to the amount consumed locally. Barley and rye are mostly cultivated for farmers' own use and little is sold outside of producing districts.

Kiangsu, being the center of the flour milling industry in this country, absorbs annually considerable quantities of wheat from provinces of Shantung, Hupeh, Kiangsi, Hunan, Honan and Liaoning. In addition to wheat from other provinces, large quantities are imported annually from the

United States, Canada and Australia. Since 1930, wheat imported from Soviet Russia have been quite considerable in volume.

Prices of imported wheat are usually lower, the quality better than that of the home products, which fact has seriously affected the production of wheat in this Province. The imports of foreign wheat increased very rapidly in 1931, as shown by the table.

	1929 Quantity (piculs)	1929 Value (Hk. Tls.)
Shanghai	5,464,079	20,625,913
Chinkiang	—	—
Nanking	—	—
Total	5,464,079	20,625,913

	1930 Quantity (piculs)	1930 Value (Hk. Tls.)
Shanghai	2,391,154	11,238,397
Chinkiang	115,198	481,018
Nanking	184,779	794,817
Total	2,691,131	12.514.232

	1931 Quantity (piculs)	1931 Value (Hk. Tls.)
Shanghai	19,419,099	74,133,513
Chingkiang	514,835	2,026,242
Nanking	997,582	4,208,642
Total	20,931,516	80,368,396

CHAPTER III

BEANS

THE TRADE of beans, one of the largest items of China's exports, gained its importance only recently. Even in the nineteenth century the usefulness of beans was still not known to foreigners. The export of bean was prohibited until in 1890 when this article was first time exported to Japan. In 1908 the Mitsui Bussan Kaisha, Ltd. (三井洋行), a Japanese concern, shipped Manchurian beans to London for a trial sale, which yielded a handsome profits. Since then beans were exported on very large scale, increasing especially conspicuously in 1909. Following the example of oil factories in Great Britain other industrial countries made great profits by ordering large quantities from China. The export of beans in recent years has exceeded that of silk and tea, being the most important article exported from China.

The Three Eastern Provinces are especially known for the production of beans. Honan, Shansi, Hupeh, Hunan, and Anhui also turn out tremendous amount of that article, while in Kiangsu, bean, although not so important an agricultural product as rice and wheat, is one of the staple produces too, the small green bean from that province being especially famous.

VARIETY AND QUALITY

There are quite many different varieties of beans. When classified according to shape, we have round, oblong, flat, kidney, and rice beans, and when grouped with colours they are known as yellow, white, green, red, brown, grey and light green beans, etc. But in business transactions beans are put under 8 categories, namely (1) yellow beans,

(2) small green, (3) black, (4) red, (5) broad, (6) white, (7) peas, and (8) miscellaneous.

Yellow bean is the principal variety produced in China. The yellow beans from Kiangsu is not surpassed in quality, by any other beans, except that from the Three Eastern Provinces. Beans from Pootung (浦東) and Pinghu (平湖) known as *tutou* (杜豆), are among the best. Products from districts north of the Yangtse River, like Tungshan, Pengpu (蚌埠), Linhuai (臨淮) and Suchien are small and dry.

Next to yellow beans in importance is the small green bean. Its shape and size are similar to the yellow bean, but of a green colour which turns into brown after long exposure. Although not so good in quality as yellow beans, small green bean has rich contents of protein. Besides the common small green beans there is another special variety known as "Large Grain Green Bean," which is larger in size but not very rich in oil. The black bean, of various sizes and shapes, are all very rich in fat.

According to the test made by the Central Industrial Laboratory (中央工業試驗所) every 100 pieces of yellow beans weighing 17.43 grams has the composition as follows:—

	Percentage.
Protein	41.26
Fat	27.4
Cellulose	3.67
Hydrocarbons	14.36
Ash	4.67
Water	8.64

From the above table it may be seen that the nourishment of yellow beans is as rich as milk. The principal use of beans is as foodstuff, when made into various forms. As bean oil is the cheapest, most abundant, and easily prepared oil, it is used as substitute for cream and fats in Europe and America for making soap, glycerine, candle, water-proof chemical, varnish and rubber.

The sediment of beans after oil is pressed is made into cakes, and have been extensively used as fertilizer and animal fodder. With its valuable contents with over 80 per cent organic substance, about 6 per cent nitrogen, 2 per cent potassium 1 per cent phosphorous, beancakes are now also used as raw material in many chemical industries.

PRODUCTION

According to investigations made by the Legislative Yuan in 1930 Tungshan has the largest area under the cultivation of beans. Next come Kuanyun, Shuyang, and Jukao, etc. Broad bean is not grown in every district in Kiangsu, and the output is small. The following table shows the area in *mou* under the cultivation of four varieties of beans in various districts in Kiangsu:—

	Yellow	Broad	Peas	Small Green
Nanhui	60,000	5,760	——	——
Sungkiang ...	133,000	5,764	——	——
Shanghai	47,000	——	——	——
Paoying	89,000	——	——	283,294
Taihsing	73,000	——	——	——
Chuansha ...	17,000	——	——	——
Tsingpu	46,000	——	——	——
Huaian	706	——	——	——
Chinshan	19,000	74,529	——	——
Wuhsien	102,000	——	——	——
Kiating	72,000	72,320	——	——
Tsungming ..	104,000	——	——	——
Changshu	123,000	——	——	——
Kiangyin	124,000	——	——	——
Ihsing	58,000	——	——	——
Kaoshun	19,000	——	——	——
Kiangning ...	300,000	——	——	——
Kiangtu	12,000	9,093	9,093	——
Icheng	41,000	——	16,424	——
Chintan	73,000	——	——	——
Yangchung ..	14,000	——	——	——
Kiangtu	493,000	64,158	——	——
Huaiyin	493,000	——	——	——
Suhsien	232,000	——	——	17,204

Tungshan	1,881,000	—	—	548,520
Tangshan ...	531,000	—	—	—
Peihsien	486,000	—	—	—
Shuyang	1,226,000	—	—	—
Kuanyun	1,391,000	—	—	—
Lienshui	925,000	140,141	—	—
Yencheng ...	309,000	—	—	—
Tungtai	168,000	10,500	—	—
Jukao	959,000	—	—	922,125
Nantung	370,000	555,000	—	—
Chitung	218,000	322,400	—	—
Wukiang	36,000	—	—	—
Kunshan	—	13,097	—	—
Paoshan	18,000	122,540	—	—
Taitsung	55,000	23,673	—	—
Wusih	122,000	—	—	—
Wuchin	275,000	—	—	—
Liyang	56,000	—	—	—
Lishui	42,000	—	—	—
Chüyung	73,000	—	—	—
Luho	130,000	—	46,330	—
Chinkiang ...	98,000	—	—	—
Tanyang	147,000	—	—	—
Taihing	218,000	—	—	—
Kaoyu	68,000	—	—	—
Ssuyang	668	—	—	—
Suining	296	—	—	—
Hsiaoshien ...	745	—	—	—
Fenghsien ...	678	—	—	—
Peihsien	451	—	—	112,772
Tunghai	840	—	315,000	—
Kanyü	991	—	42,180	—
Founing	350	23,302	46,604	—
Hsinghua ...	193	—	—	—
Taihsien	390	—	—	—
Tsingkiang ..	168	18,692	—	—
Haimen	145	192,938	—	—
Total ...	19,331,000	1,734,387	475,631	1,883,915

MARKETING

According to the estimate made in 1932 the aggregate output in Kiangsu is 13,487,501 *shih*, with Jukao, Tungshan, Founing, Taihsien, Lienshui and Wuchin as the

principal producing districts. Broad beans come largely from the districts lying north of the Yangtse River, especially from Kiangtu, Jukao, Wuchin, the total output being estimated at 3,409,100 *shih*. Peas and small green beans are not important products of the Province, and they are consumed by the farmers themselves only. The following table shows the estimated output (in *shih*) output of various beans in Kiangsu in 1932:—

	Yellow	Broad	Others
Nanhui	20,000	12,000	—
Sungkiang	15,000	10,000	—
Shanghai	70,000	—	—
Chinshan	30,000	20,000	—
Wuhsien	59,760	900	—
Kiating	52,566	118,274	—
Tsungming	50,000	2,000	500
Changshu	140,000	—	—
Kiangyin	10,000	30,000	100
Ihsing	60,000	—	—
Kaoshun	800	500	—
Kiangning	1,000	—	—
Kiangpu	20,000	1,000	—
Icheng	24,000	10,000	1,000
Chintan	30,000	1,000	—
Yangchung	—	—	—
Kiangtu	436,700	818,000	65,500
Fenghsien	52,500	315,000	35,000
Chuansha	40,000	30,000	—
Tsingpu	40,488	34,704	—
Wukiang	62,000	250,000	—
Kunshan	—	—	—
Paoshan	15,000	12,000	—
Taitsang	100,000	80,000	—
Wusih	20,000	20,000	—
Wuhsin	420,000	200,000	5,000
Liyang	25,000	13,000	—
Lishui	10,000	—	—
Chüyung	36,467	—	—
Luho	197,920	25,000	88,570
Chinkiang	80,000	850	—

Tanyang	150,000	500	20,000
Taihsing	208,000	108,000	——
Kaoyu	120,000	30,000	——
Paoying	100,000	15,000	——
Huaiyin	169,000	——	——
Suchien	200,000	15,072	300,000
Tungshan	911,600	——	——
Tangshan	13,000	——	——
Peihsien	24,000	——	——
Shuyang	450,000	——	——
Kangyü	250,000	——	——
Lienshui	424,000	100	7,400
Yencheng	20,000	4,000	——
Tungtai	387,000	37,900	——
Jukao	2,865,000	407,000	594,300
Nantung	550,000	50,000	——
Chitung	178,000	70,000	20,000
Huaian	105,000	103,000	26,000
Ssuyang	100,000	——	40,000
Suining	280,000	——	60,000
Hsiaohsien	164,000	——	320,000
Fenghsien	202,400	——	——
Peihsien	69,600	500	1,500
Tunghai	350,000	——	250,000
Kuanyun	200,000	——	——
Founing	500,000	170,000	230,000
Hsinghua	40,000	——	——
Taihsien	700,000	287,000	——
Tsingkiang	207,000	——	——
Haimen	168,000	6,800	——
Total	112,487,501	3,409,100	2,164,870

For the purpose of comparison we give below figures (in catties) for 1930:—

	Yellow	Broad	Peas	Small Green
Nanhui	9,300,000	5,760	——	——
Sungkiang ...	13,200,000	——	——	——
Shanghai ...	6,206,000	——	——	——
Chinshan ...	3,652,000	9,763	——	——

Wuhsien	10,913,000	—	—	—
Kiating	10,197,000	—	—	—
Tsungming ..	10,558,000	—	—	—
Changshu ...	15,167,000	—	—	—
Kiangying ..	22,620,000	—	—	—
Ihsing	5,800,020	—	—	—
Kaoshun	2,037,000	—	—	—
Fenghsien ...	12,395,000	—	—	—
Chuansha	2,950,000	—	—	—
Tsingpu	7,247,000	—	—	—
Wukiang	3,337,000	—	—	—
Kunshan	—	1,912	—	—
Paoshan	5,514,000	17,278	—	—
Taitsang	10,756,000	3,423	—	—
Wusih	21,954,000	—	—	—
Wuchin	42,421,000	—	—	—
Liyang	8,349,000	—	—	—
Lishui	7,706,000	—	—	—
Kiangning ..	40,541,000	—	—	—
Kiangpu	2,340,000	1,455	955	—
Icheng	5,159,000	—	1,725	—
Chintan	9,956,000	—	—	—
Yangchung ..	1,691,000	—	—	—
Kiangtu	62,468,000	10,265	—	—
Paoying	12,483,000	—	—	22,664
Huaiyin	35,003,000	—	—	—
Suchien	22,064,000	—	—	1,376
Tungshan ...	268,932,000	—	—	43,882
Tangshan	49,896,000	—	—	—
Peihsien	53,018,000	—	—	—
Shuyang	103,984,000	—	—	—
Kuanyun	96,149,000	—	—	—
Lienshui	61,046,000	25,225	—	—
Yencheng ...	55,582,000	—	—	—
Tungtai	26,040,000	1,323	—	—
Jukao	168,048,000	—	—	73,770
Nantung	41,440,000	49,395	—	—
Chitung	23,369,000	33,852	—	—
Chuyung	7,168,000	—	—	—
Luho	17,642,000	—	4,865	—
Chinkiang ...	7,153,000	—	—	—
Tanyang	13,415,000	—	—	—
Taihsing	47,158,000	—	—	—
Kaoyu	9,952,000	—	—	—
Huaian	77,643,000	—	—	—
Ssuyang	61,479,000	—	—	—
Suining	31,094,000	—	—	—

Hsiaohsien ..	78,971,000	—	—	—
Fenghsien ...	59,019,000	—	—	—
Peihsien	46,011,000	—	—	9,022
Tunghai	100,800,000	—	23,310	—
Kanyü	208,643,000	—	4,429	—
Founing	30,060,000	2,936	4,893	—
Hsinghua ...	6,328,000	—	—	—
Taihsien	60,521,000	—	—	—
Tsingkiang ..	25,576,000	2,393	—	—
Haimen	9,116,000	23,153	—	—
Total ...	395,255,000	204,104	40,240	150,714

TRANSACTIONS

Transactions at the producing places are usually done through brokers. But sometimes bean product manufacturers buy direct from the producers. The prices of various beans are quite different in different places. Yellow bean is sold as high as $10 per *shih* at Kaoshun and Chintan and as low as $3 at Kiangning, Tangshan and Peihsien. The price of broad beans ranges from $12 per *shih* at Peihsien and Founing to $3 at Nanhui and Fenghsien. A detailed price list of beans (dollars per *shih*) in different districts in Kiangsu is given below:—

	Yellow	Broad	Others
Nanhui	7.5	4.0	—
Sungkiang	10.0	9.0	—
Shanghai	8.5	—	—
Chinshan	6.0	6.0	—
Wuhsien	7.5	7.0	—
Kiating	8.0	5.4	—
Tsungming	8.0	5.0	5.0
Changshu	7.0	7.0	—
Kiangyin	8.5	7.0	10.0
Ihsing	8.5	—	—
Kaoshun	10.0	5.0	—
Kiangning	3.0	—	—
Kiangpu	8.0	7.0	—
Icheng	7.0	8.0	—
Chintan	10.0	7.0	—
Yangchung	—	—	—

Kiangtu	7.0	6.5	6.0
Paoying	6.0	7.0	—
Huaiyin	4.2	—	—
Suchien	9.0	5.0	3.5
Tungshan	6.0	—	—
Tangshan	3.0	—	—
Peihsien	3.0	—	—
Shuyang	6.0	—	—
Kangyü	4.4	—	—
Lienshui	6.0	4.0	5.0
Fengsien	8.0	3.5	—
Chuansha	6.0	4.0	—
Tsingpu	10.0	—	—
Wukiang	5.0	4.0	—
Kunshan	—	—	—
Paoshan	6.0	5.0	—
Taitseng	8.0	7.0	—
Wusih	7.0	5.5	—
Wuchin	8.0	9.0	8.0
Liyang	8.0	4.0	—
Lishui	8.0	—	—
Chüyung	8.0	—	—
Luho	7.0	7.5	7.5
Chinkiang	7.0	7.0	—
Tanyang	8.9	7.0	8.0
Taihsing	8.0	5.0	—
Kaoyu	8.0	8.0	—
Hüaian	5.0	5.0	5.0
Ssuyang	6.0	—	4.5
Suining	7.5	—	7.0
Hsiaohsien	4.0	—	4.0
Fenghsien	5.4	—	—
Peihsien	10.0	12.0	10.0
Tunghai	10.0	—	9.0
Kuanyun	10.0	—	—
Founing	10.0	11.0	10.0
Yencheng	6.0	6.6	—
Tungtai	6.2	7.5	—
Jukao	8.0	5.5	5.0
Nantung	8.0	5.5	—
Chitung	7.0	5.0	7.5
Hsinghua	7.0	—	—
Taihsien	6.6	—	—
Tsingkiang	8.0	6.0	—
Haimen	7.0	5.0	—

Although trade in yellow bean in Kiangsu is growing steadily, there are only twelve districts which are yielding beans more than enough to meet and are their own demands exporting about half of their products. Fourteen districts produce just sufficient for local consumption while districts depending on others for beans are as many as ten. This is also the case with broad and other beans. The surplus beans go mostly to Shanghai from where they are re-exported. A certain portion is shipped to Wusih and Tsingtao. The table at the end of the Chapter gives some idea about the condition of supply and demand of beans in Kiangsu.

Bean markets in Kiangsu are centred in Shanghai, where not only beans from Kiangsu, but from other provinces are shipped to. The principal supply of beans in Shanghai market is generally from the Yangtse ports like Hankow, Kiukiang, Tientsin, Tsinan, Tsingtao and provinces of Hunan, Anhui, Manchuria, etc. Beans from the Yangtse ports are shipped to Shanghai in large quantity, but their quality is inferior to the products of the north and are largely used for making bean curd, bean sprouts and for pressing oil. A certain proportion is re-shipped to Swatow, Wenchow, Taichow, Canton, Ningpo, Shaohsing, and Wusih. Beans from Three Eastern Provinces, Tientsin, and Tsingtao are consumed chiefly by Shanghai soy makers, a small part being re-exported.

The unit of bean transactions is one hundred catties on *ssu ma scale* (司馬秤), and prices are quoted in Shanghai taels. The article from the northeastern ports is mostly carried out by either British or Japanese steamers, while on the Yangtse River, the Chinese Merchant Steam Navigation Company and the San Peh Steam Navigation Company and foreign steamers are all very active, and competition very keen.

Bean merchants in Shanghai are divided into two main groups, the Southern and the Northern. Their customs of transaction, differ, with the Southern group more conservative, still observing the old habits, and Northern group having their new regulations of transaction.

	YELLOW BEANS.		BROAD BEANS.		OTHERS.	
	Consumed Locally Percentage	Outside Market	Consumed Locally Percentage	Outside Market	Consumed Locally Percentage	Outside Market
Nanhui	100	——	100	——	100	——
Sungkiang	30	Shanghai	100	——	—	——
Fenghsien	100	——	80	Shanghai	100	——
Chuansha	30	Shanghai	30	Shanghai	—	——
Wuhsien	40	Shanghai, Wuhsien	—	——	—	——
Kiating	(*)	——	40	Shanghai	—	——
Tsungming	100	——	100	——	100	——
Changshu	100	——	—	——	—	——
Kiangyin	100	——	100	——	100	——
Kaoshun	100	——	100	——	—	——
Kiangning	40	Nanking	—	——	—	——
Kiangpu	100	——	100	——	—	——
Icheng	80	Nanking	30	Nanking	40	——
Yangchung	—	——	—	——	—	——
Tsingpu	100	——	100	——	—	——
Wukiang	100	——	—	——	—	——
Kunshan	—	——	—	——	—	——
Paoshan	100	——	100	——	—	——
Taitsang	20	Shanghai	100	——	—	——
Luho	80	Chekiang, Wusih	30	Chinkiang, Wusih	40	Wusih
Tanyang	40	Wusih, Wuchin	100	——	—	——
Taihsing	100	——	100	——	—	——
Kiangtu	100	——	—	——	—	——

Paoying	65	Shanghai	100	——	—	——
Huaiyin	25	Kiangning, Tsingtao	—	——	—	——
Suchien	30	Shanghai, Nanking	100	——	60	Shanghai
Tungshan	15	——	—	——	—	——
Tangshan	30	Shanghai, Tungshan	—	——	—	——
Peihsien	100	——	—	——	—	——
Shuyang	55	Kuanyun	—	——	—	——
Kuanyun	30	Neighbouring districts	—	——	—	——
Lienshui	30	Shanghai	100	——	100	——
Yencheng	50	Neighbouring districts	100	——	—	——
Tungtai	100	——	100	——	—	——
Jukao	100	Shanghai	—	——	—	——
Nantung	(*)	——	100	——	—	——
Kaoyu	100	——	100	——	—	——
Huaian	40	Kaoyu	65	Kaoyu	80	Chinkiang
Ssuyang	50	Wusih	—	——	50	Shanghai
Suining	65	Wusih	—	——	—	——
Hsiaohsien	50	Shantung	—	Shantung	80	Tungshan
Fenghsien	20	Shantung, Tungshan	—	——	—	——
Peihsien	60	Tungshan	100	——	100	——
Tungshan	90	Kiangnan	—	——	80	——
Kangyu	45	Shanghai, Tsingtao	—	——	—	——
Founing	50	Tungtai, Kiangyin, etc.	100	——	65	Neighbouring district
Taihsien	100	——	—	——	—	——
Tsingkiang	100	——	100	——	—	——
Haimen	70	Shanghai	55	Shanghai	—	——
Chitung	40	Shanghai	15	Kiangnan	10	Kiangnan

*Not self-sufficient

CHAPTER IV

MAIZE

MAIZE used to be consumed exclusively as a foodstuff, but its manifold uses in industries have been discovered. From it starch, sugar and alcohol can be obtained. The stalks and the ears can be used as raw material for manufacturing paper, and as a fodder for animals.

It is a plant grown in tropic or sub-tropic region, but it is easily adaptable to climatic conditions, and can be grown even in the north where there is a warm summer. It grows on loose, dry ground, and lamp and sticky soil is not suitable for its growth. It takes an average period of 140 days for the corn to ripen. Besides Honan, Hopei, and the Three Eastern Provinces, Kiangsu, although principally a rice-producing province, turns out large quantities of maize, especially in those districts lying north of the Yangtse River. Maize from Jukao are of three different colours, red, yellow, and white. White maize is sweet and juicy, while the yellow not so good in quality, but is yielded in larger crops. Among the six varieties produced in Haimen, the white one is the best in quality and the red the next, the latter giving the largest crop. In Kiangning districts yellow maize is considered as the best variety with big and even grains. The white maize with ears of nine inches and the red with ears of seven inches long in Tsungming are also among the best products. Besides the common varieties, there is also the Sweet maize or *kan yu shu shu* (甘玉蜀黍), *ma ch'ih yu shu shu* (馬齒玉蜀黍), *hsiao li yu shu shu* (小粒玉蜀黍), etc. The seed of common maize is flat on the surface and mostly yellow in colour, sometimes white, or purple, or black. To this group belong the Changhan (長漢), *Paisuishih* (白燧石) etc., *kan yu shu shu* is very sweet, and their seeds are full of wrinkles on the surface. The seed of *ma ch'ih yu shu shu* is concave on the surface and they are so shaped as horse teeth, hence the name. The seed of *hsiao li yu shu shu* or the "Small Grain Maize" are

very small, of the maize produced in Kiangsu only a very small portion being of this variety.

Maize seed should be taken from fully matured plants and is brined in order to get the best quality. In April or May maize may be sowed in loose soil at a distance of from one foot to one foot and half for three seeds, the soil being laid out in rows of from 2 to 3 feet apart. As maize has a strong tendency to absorb oxygen virgin soil is required to assure a good crop. The period from July to November is the time for harvesting, the output ranging from 5 to 9 *tou* per *mou*.

PRODUCTION

Maize is grown in abundance in districts north of the Yangtse River. Huaian has the largest area under cultivation of corn, with Lienshui and Kuanyun next. As regards output Huaian and Kuanyun stand foremost, each producing about 2,000,000 *shih* annually, while the output of the districts on the other side of the Yangtse River is much smaller, even Tsungming, the most productive district, produces only 110,000 *shih*. The following table gives the area devoted to maize and the output of the nineteen districts in Kiangsu in 1932:—

	Area Under Cultivation (*Mou*)	Output (*Shih*)
Chuansha	11,000	15,200
Tsungming	115,000	110,000
Kiangning	14,000	22,000
Kiangpu	21,000	10,000
Huaian	847,000	2,000,000
Ssuyang	297,000	300,000
Shanghai	27,000	40,000
Taitsang	——	3,000
Chüyung	——	1,800
Kiangtu	43,000	40,000
Huaiyin	145,000	150,000
Shuyang	169,000	180,000
Tunghai	210,000	32,400
Lienshui	673,000	700,000
Nantung	74,000	36,000
Chitung	125,000	210,000
Kuanyun	695,000	2,000,000
Founing	117,000	80,000
Haimen	193,000	230,000
Total	3,926,000	6,160,400

For comparison we given below output for 1930:—

	Catties
Chuansha	1,515,000
Tsungming	10,236,000
Kiangning	2,188,000
Chinkiang	467,000
Huaian	164,321,000
Ssuyang	32,967,000
Shanghai	3,871,000
Changshu	1,751,000
Kiangpu	4,243
Kiangtu	3,807,000
Huaiyin	15,225,000
Suchien	4,267,000
Suining	6,160,000
Shuyang	19,744,000
Kuanyun	119,622,000
Founing	7,806,000
Haimen	23,153,000
Peihsien	3,862,000
Tunghai	27,300,000
Lienshui	68,613,000
Nantung	6,808000
Chitung	20,342,000
Total	550,058,000

In Kiangsu maize is consumed largely by farmers themselves, and only a very small portion is exported to neighbouring districts. The prices of this article range from $2 to $5 per picul.

CHAPTER V

KAOLIANG

KAOLIANG grows abundantly in northern China, especially in the Three Eastern Provinces, Hopei, Jehol, Shansi, Shantung, and Honan. In central China, in the provinces of Anhui, Hupeh and Kiangsu kaoliang is also grown, but the output is small.

In Kiangsu kaoliang is produced in Taihsien, Jukao, Haimen, Tungshan, Kuanyun, Founing, Suchien, Lienshui and Peihsien, while among districts south of the Yangtse River kaoliang is grown in Tsungming and Chinkiang only.

VARIETIES AND QUALITY

Kaoliang is not very highly susceptible to soil and climatic conditions and can stand both flood and drought. The sowing season lasts from April to May and the harvest season is usually in September when the stalk and leave become yellow. The yield of each *mou* ranges from 8 *tou* to one *shih*. There are four general varieties of kaoliang, the common kaoliang, and the *ya chin* kaoliang (鴨頸高粱) used as food, the *chou* kaoliang (帚高粱) used for making sweepers and brushes, and the *lu shu* (蘆粟) for making sugar.

Kaoliang may be used as human and animal food, and for making Samshu. The stalk is used to a quite large extent by farmers as building materials, for making toys, and as fuel.

PRODUCTION

According to investigations made in 1930 Tunghai has the largest area under kaoliang cultivation, with Tungshan, Tangshan, Kangyu and Lienshui the second largest, while in Chuansha and Tsungming the area is negligible. The following table showing the area under the cultivation of kaoliang and the output, is compiled from the results of our investigation last year:—

	Area Under Cultivation (*mou*)	Yield (*Shih*)
Chuansha	4,000	7,000
Kiangning	14,000	30,000
Kiangtu	43,000	80,000
Huaiyin	44,000	53,000
Suchien	172,000	700,000
Tungshan	549,000	770,400
Tangshan	497,000	245,100
Peihsien	219,000	32,500
Shuyang	371,000	150,000
Kuanyun	556,000	800,000
Lienshui	448,000	500,000
Yencheng	10,000	20,000
Taihsien	164,000	570,000
Haimen	80,000	70,000
Tsungming	46,000	40,000
Taihsing	219,000	500,000
Huaian	198,000	170,000
Ssuyang	99,000	200,000
Suining	261,000	240,000
Hsiaohsien	452,000	700,000
Fenghsien	404,000	384,000
Peihsien	324,000	139,200
Tunghai	630,000	144,000
Kangyü	464,000	180,000
Founing	151,000	821,000
Tungtai	42,000	70,000
Jukao	184,000	490,000
Chitung	83,000	70,000
Total	6,736,000	8,176,200

For the purpose of comparision the figures for 1930 is given below:—

	Output (Catties)
Chuansha	661,000
Kiangning	2,846,000
Taihsing	52,122,000
Huaian	16,997,000
Ssuyang	16,830,000
Suining	36745,000
Hsiaohsien	68,180,000
Fenghsien	48,052,000

Peihsien	35,340,000
Tunghai	69,300,000
Kangyu	51,502,000
Founing	13,935,000
Tungtai	6,300,000
Jukao	48,504,000
Chitung	6,989,000
Tsungming	3,864,000
Chinkiang	603,000
Kiangtu	7,786,000
Huaiyun	5,220,000
Suchien	12,043,000
Tungshan	92,700,000
Tangshan	63,003,000
Peihsien	36,772,000
Shuyang	44,550,000
Kuanyung	57,307,000
Lienshui	44,697,000
Yencheng	1,853,000
Taihsien	57,542,000
Haimen	11,657,000
Total	913,300,000

Kaoliang is consumed largely by the farmers themselves, a very small portion being exported. Prices range from $6.50 per *shih* at Tsungming and Tunghai to as low as $2 in some other districts. Below is given the prices (in dollars) per *shih* at various districts:—

	Price	Percentage Consumed Locally	Markets
Chuansha	4.0	30	Shanghai
Kiangning	2.2	50	Nanking
Kiangtu	4.5	—	——
Huaiyin	4.0	100	——
Tsungming	6.5	100	——
Taihsing	3.0	100	——
Huaian	3.0	100	——
Ssuyang	—	100	——
Suchien	3.0	90	Neighbouring districts
Tungshan	3.0	70	Neighbouring districts
Tangshan	3.0	100	——
Peihsien	3.0	100	——
Shuyang	2.4	90	Neighbouring districts

Kuanyun	2.5	50	—
Lienshui	5.0	100	Neighbouring districts
Yencheng	5.0	40	Neighbouring districts
Taihsien	4.4	100	——
Haimen	5.5	100	——
Suining	6.5	100	——
Hsiaohsien	3.5	80	Tungshan, etc.
Fenghsien	3.0	100	——
Peihsien	3.0	100	——
Tunghai	6.0	80	Neighbouring districts
Kangyu	3.0	100	——
Founing	2.0	70	Kiangyin, Nantung
Tungtai	4.5	80	Shanghai
Jukao	4.0	100	——
Chitung	5.0	100	——

CHAPTER VI

GROUNDNUTS

GROUNDNUTS were first grown only in Kuangtung and Fukien Provinces. It was not planted in the North until the end of the 18th Century when the foreign missionary introduced its seeds to Shantung, which is now the largest groundnut producing province in China. According to the investigations made by Japanese groundnut output of Shantung amounts to about 5,500,000 piculs annually. But according to the estimate of the customs authority in Tsingtao, the output of Shantung, based on the export of groundnuts from this port, is about 4,000,000 piculs a year. Next to Shantung, Honan and Kiangsu are the more important groundnut-producing provinces, and it is one of the most important agricultural products of Kiangsu.

Besides being used as foods in various forms, oil is extracted from groundnuts and its uses are manifold. The oil can be used as a substitute for olive oil and for manufacturing soap. Owing to its rich content of protein, the sediment is used for feeding animals and fertilizing sugar cane and tea.

PRODUCING DISTRICTS AND OUTPUT

Groundnuts can be planted in sandy soil. In Kiangsu the best groundnuts are grown in Tsingkiang, Jukao, Haimen, and Huaian. Small groundnuts from Tsingkiang measuring from 1.7 to 1.9 inches long are very rich in fat and with large kernels. There are three varieties of groundnuts in Jukao, known as "small groundnuts," "Huai groundnuts" and "big groundnuts," the first two are rich in fat and have a fragrant flavour, while the last one although containing not as much fat as the other, yields in larger quantity. Except a certain portion consumed locally, considerable amount of Jukao groundnuts are exported to Japan. In Haimen groundnuts are known as either *hsi kuo*

(細果) or fine nuts, and *tsing kuo* (青果) or green nuts, the former better in quality than the latter. In Huaian the big groundnuts have a much larger yield than the small groundnuts.

Districts lying north of the Yangtse River have larger area under groundnuts cultivation than districts south of the River. Ssuyang tops the list as to area devoted to groundnut, but Tungshan leads in quantity produced. For details of area and output, the following table is given:

	Area (*mou*)	Output (piculs)
Nanhui	—	20,000
Tsungming	23,001	450
Kiangning	14,300	200
Luho	46,330	14,320
Tanyang	—	6,960
Huaian	141,169	1,000
Ssuyang	272,250	400,000
Suining	47,382	20,000
Hsiaohsien	270,912	218,000
Fenghsien	48,455	324,800
Shuyang	168,750	60,000
Kangyü	63,270	9,100
Founing	—	212,000
Tsingkiang	—	83,400
Haimen	—	12,300
Fenghsien	—	2,500
Kaoshun	—	300
Kiangpu	12,124	10,000
Icheng	24,636	200
Taihsing	73,000	260,000
Huaiyin	246,500	8,940
Suchien	68,817	590,000
Tungshan	195,900	1,444,500
Tangshan	102,737	24,500
Peihsien	14,097	24,360
Tunghai	42,000	648,000
Lienshui	224,226	514,500
Jukao	—	201,600
Nantung	37,000	5,440
Total	2,235,000	8,040,530

According to investigations made by the Legislative Yuan the output of groundnuts of the twenty-four districts in Kiangsu in 1930 is as follows:—

	Catties
Kiating	3,254,000
Kiangning	1,759,000
Luho	11,583,000
Taihsing	14,600,000
Huaiyin	130,645,000
Suchien	13,763,000
Tungshan	62,492,000
Tangshan	25,273,000
Peihsien	10,749,000
Shuyang	37,969,000
Kuanyun	8,346,000
Lienshui	37,894,000
Tsungming	2,300,000
Kiangpu	1,212,000
Icheng	5,198,000
Huaian	23,011,000
Ssuyang	86,576,000
Suining	17,247,000
Hsiaohsien	92,652,000
Fenghsien	9,982,000
Peihsien	7,542,000
Kangyü	7,909,000
Tunghai	8,610,000
Nantung	4,813,000
Total	625,376,000

Groundnuts should be grown in dry soil and in mild climate. Too much iron in the soil will decompose the shell and hurt the nuts, while a proper amount of lime in the soil helps the growth of the nuts. There are usually two crops of groundnut a year and it is planted when the soil is lying idle after the harvest of wheat in winter. Groundnut seeds are sown either in the latter part of March or the beginning of April and harvest takes place late in autumn.

SUPPLY AND DEMAND

Just like other agricultural products, prices of groundnuts vary in different districts. In Kiangning, Nantung, etc. it is sold at about $8 per picul, and in Kaoshun $12, while in Founing only $1 a picul. Districts lying north of the Yangtse River in Kiangsu are exporting groundnuts, mostly to Shanghai, while those south of the River generally import this article from other districts. The following

table shows the price, the proportion consumed locally and markets outside of the producing districts:—[1]

	Price (Dollar per Picul)	Percentage Consumed Locally	Markets
Nanhui	6.5	100	——
Kaoshun	12.0	—	——
Kiangpu	4.0	100	——
Taihsing	6.0	50	Shanghai, Chinkiang
Huaiyin	5.0	30	Kiangnan, Tsingtao
Suchien	5.0	45	Nanking, Shanghai
Tungshan	3.0	20	Shanghai
Tangshan	2.0	15	Shanghai
Peihsien	4.0	60	Shanghai
Tunghai	5.0	50	Shanghai, etc.
Lienshui	5.0	40	Shanghai, etc.
Jukao	8.0	100	——
Nantung	8.0	20	Shanghai, Changshu
Fenghsien	5.0	—	——
Kiangning	7.6	50	Nanking
Icheng	3.2	100	——
Huaian	6.0	100	——
Ssuyang	4.0	45	Shanghai
Suining	1.0	30	Nanking, Shanghai
Hsiaohsien	4.0	20	Shanghai, Tungshan
Fenghsien	5.0	20	Tungshan, Shantung
Shuiyang	5.0	30	Kuanyun
Kangyu	5.0	30	Shanghai, etc.
Founing	1.0	50	Kiangnan
Tsingkiang	4.0	80	Shanghai
Haimen	7.5	20	Shanghai

TRANSACTIONS

Groundnuts are exported from producing districts through groundnut *hongs*, which buy from the producers either direct or through local brokers. Transactions between merchants from other districts and the producers are sometimes done without the broker. That period from October to April in the following year, especially in November, is the busiest season. Groundnuts from producers are generally with shell, and when only kernels are wanted, the *hong* will undertake the unshelling. From every picul of the best groundnuts about 75 catties of kernels can be obtained, 66 catties from the second class and 64 from the third.

CHAPTER VII

COTTON

THE MILD climate and loose soil in Kiangsu are most suitable for the plantation of cotton. In addition to the natural conditions, the Province has all facilities of communications and transportation with the Lunghai, Tientsin-Pukow, Nanking-Shanghai and Shanghai-Hangchow railways running through its territory, making it the centre of cotton trade. The producing districts in Kiangsu can be divided into two sections, those lying north and south of the Yangtse River. Cotton from southern Kiangsu is collected at Shanghai and re-exported, while in northern Kiangsu, Nantung is the cotton centre. Cotton from Tsungming, Chitung, Haimen and Jukao is also known as Nantung cotton, all enjoying a good reputation. Kiangsu cotton is supposed to be of medium quality, but when compared with imported cotton, it is far inferior.

VARIETY AND DISTRIBUTION

Changshu, Taitsang, Kiating, Kiangyin, Shanghai, Paoshan, Chuansha, Nanhui, Fenghsien, Sungkiang, Chinshan, Tsingpu, etc. are the principal cotton producing districts in southern Kiangsu, while in northern Kiangsu, Tungchow, Haimen, Tsungming, Jukao, Tungtai, etc. are known for their production of cotton. According to the habits of transaction Kiangsu cotton are known as:—

Tungchow Cotton.—Cotton from that part with Taihsing in the west, Yenfou (鹽阜) in the north, the China Sea in the east, and the Yangtse River in the south, measuring more than 300 *li* from east to west and 150 *li*

from south to north is all known as Tungchow Cotton. The fibre of Tungchow cotton is white and clean, the only defect being a little too stiff. As far as quality is concerned Nantung cotton is the best among this group, with Haimen second and Tsungming last.

Changyinsha Cotton.—It is planted on the little islands in the Yangtse River, known as Changyinsha (常陰沙) and Panlansha (盤籃沙). The fibres are fine and long, better than the Tungchow cotton in quality.

Changshu Cotton.—There are over 400,000 *mou* of land in Changshu under the cultivation of cotton. Laowushih (老吳市), Hsiaowushih (小吳市), Changchiashih (張家市), Chouchingkou (周涇口), Kuichiashih (歸家市), Meilichen (梅李鎮), etc. are the most known producing districts. Not only fine and long the fibres are white and clean, next only to Shensi cotton in quality.

Taitsang Cotton.—With Shachi (沙溪), Hsintang (新塘), and Maochiashih (毛家市) as the most important producing places, Taitsang cotton gives white, fine and long fibres. The *hei tse mien* (黑子棉) or "Black Seed Cotton" is similar to the Changyinsha cotton in quality.

Shanghai Cotton.—The Shanghai cotton is generally known as the *nan pei shih mien* (南北市棉), this including cotton from Paoshan, Chuansha, Nanhui, Fenghsien, Sungkiang, Chinshan, Tsingpu, etc. There is not much difference in quality between these varieties of cotton. The *nan shih mien* (南市棉) is ginned with manual labour, while the *pei shih mien* (北市棉) with machinery. Minghong seed is the best in quality in this group.

The following table gives some idea about the quality of cotton produced in some districts in Kiangsu·—

	Varieties	Fibre Length	Fibre Colour	Percentage of Lint
Nantung	Chi Chiao Mien, Changyinsha Mien, "Green Stalk Black Seed" Cotton (Tsingchinheitse Mien (青莖黑子棉)	0.7 to 1 inch.	white	36—42
Haimen, Tsungming	Hei Tse Mien, Yang Mien (仰棉)	0.7 to 1 inch.	white	30—38
Jukao, Tsingkiang, Taihsing	"Green Stalk Tungchow Cotton (Tsingchintung Mien (青莖通棉)	0.7 to 1 inch.	white	32—38
Taihsien, Tungtai	"Green Stalk Tungchow" Cotton	0.7 to 1 inch.	white	32—38
Yencheng, Founing, Hsinghua	Tung Mien, Imported Cotton	0.5 to 0.9 inch.	white	30—35
Kiangtu, Kaoyü, Huaiyin, Huaian	"Green Stalk Tungchow" Cotton	0.5 to 0.8 inch.	white	30—34
Paoying	Tung Mien, Imported Cotton	0.7 to 0.9 inch.	white	28—29
Lienshui, Kuanyun	"White Seed" Cotton (Pei Tse Mien, 白子棉)	0.5 to 0.7 inch	white	24—32.
Changshu	Changyinsha "Black Seed" Cotton (Changyinsha Hei Tse Mien 長陰沙黑子棉), Taitsang Mien, Yang Mao Hei Tse Mien (Wool Black Seed Cotton, 羊毛黑子棉)	0.7 to 1 inch.	white	35—42
Taihsing, Kiating, Paoshan..	"White Seed Cotton" Taitsang Mien	0.7 to 1 inch.	white	35—39
Shanghai	"White Seed Cotton" Minghong Mien	0.7 inch.	white	36—38
Nanhui, Fenghsien	Pootung Mien, Haitang Mien, Hsinking Mien	0.7 to 0.8 inch.	white	35—37
Chuansha	Chuansha Mien	0.75 inch.	white	36
Tsingpu	Tsingpu Mien	0.75 inch	white	24—32
Kiangyin	Changyinsha Mien	0.7 to 1 inch.	white	35—39

AREA UNDER CULTIVATION AND PRODUCING ZONE

Although the area under cotton in Kiangsu is not as big as that devoted to rice and wheat, the position occupied by this article in agriculture is just as important. According to investigations by the Chinese Cotton Mill Owners' Association, the area under cotton cultivation in Kiangsu in 1931 was 7,656,244 *mou*, and to the first estimate made in 1932 the figure was put at 8,254,829 *mou*, the second investigation made in December 1932 at 8,495,107 *mou*, the highest of all provinces in China. But according to the estimate of the Legislative Yuan of 1931 there were 11,088,000 *mou* of land in this Province under cultivation of cotton. In short, the importance of cotton cultivation in Kiangsu can be seen from the fact that the cotton area in Kiangsu is about a quarter of the total in China, which was 31,637,779 *mou* in 1931 and 37,086,775 *mou* in 1932.

Nantung is the district in Kiangsu that has the largest cotton area, covering about 1,350,000 *mou*, Tsungming and Haimen being the next. That the cotton field in Nantung occupies almost 14 per cent of the total area in the Province is almost constant, while in other districts the size of the area varies from year to year. For instance, there were over 1,000,000 *mou* of cotton field in Jukao before 1929, but now only 480,690 *mou* remain. In the following is given the area in *mou* under cotton in various districts in Kiangsu from 1926 to 1932:—

	1932	1931	1930	1929	1928	1927	1926
Nantung	1,189,426	1,417,956	1,316,643	1,718,061	1,662,000	1,190,000	1,700,000
Haimen	720,193	718,487	723,513	748,469	711,000	528,000	660,000
Jukao	480,690	490,500	710,000	1,045,696	1,406,000	871,000	1,340,000
Tsungming	800,000	372,600	500,000	500,000	1,000,000	800,000	900,000
Taihsing	290,000	8,000	9,000	15,000	40,000	30,000	30,000
Tsingkiang	256,729	112,500	112,500	90,000	50,000	60,000	50,000
Tungtai	600,000	420,000	630,000	750,000	250,000	200,000	200,000
Taihsien	——	——	5,000	60,000	50,000	50,000	50,000
Yencheng	150,000	161,888	229,342	330,000	250,000	230,000	200,000
Founing	375,918	134,805	192,580	300,000	250,000	200,000	180,000
Kiangyin	——	90,000	86,800	125,000	100,000	121,000	70,000
Changshu	470,000	450,000	461,874	480,000	410,000	400,000	330,000
Taitsang	551,740	563,000	588,000	520,000	500,000	494,619	400,000

Kiating	346,000	300,712	367,708	343,268	400,000	380,000	350,000
Shanghai	245,000	130,000	120,000	134,400	250,000	272,000	200,000
Paoshan	188,748	192,600	191,807	216,000	340,000	337,000	300,000
Nanhui	507,332	558,396	577,092	780,000	700,000	700,000	720,000
Fenghsien	229,810	234,500	335,000	396,000	330,000	330,000	312,000
Chuansha	115,000	115,000	140,000	141,426	125,000	135,000	137,000
Chitung	550,000	555,000	800,574	500,000	—	—	—
Sungkiang	240,000	230,000	119,552	120,000	—	—	—
Chinshan	57,500	57,300	57,330	70,000	—	—	—
Tsingpu	95,000	93,000	48,472	125,000	—	—	—
Fenghsien	56,743	—	—	—	—	—	—
Kiangpu	—	—	4,000	21,428	—	—	—
Shanghai Municipality	—	250,000	196,000	—	—	—	—
Total	8,254,829	7,656,244	8,625,235	9,511,179	8,824,000	7,328,619	8,129,000

The Statistics Department of the Legislative Yuan in 1931 made investigations of same nature putting the area under cotton cultivation in Kiangsu at 11,000,000 *mou*, distributed as follows:—

	Mou
Nanhui	756,000
Sungkiang	176,000
Shanghai	325,000
Chinshan	75,000
Wuhsien	——
Kiating	398,000
Tsingming	506,000
Changshu	503,000
Kiangyin	174,000
Ihsing	58,000
Kaoshun	14,000
Kiangning	29,000
Kiangpu	15,000
Icheng	33,000
Chintan	8,000
Yangchung	16,000
Kiangtu	——
Paoying	——
Huaiyin	——
Suchien	——
Tungshan	235,000
Tangshan	86,000
Peihsien	49,000
Shuyang	——
Kiangyin	——
Lienshui	28,000
Yencheng	103,000
Fenghsien	316,000
Chuansha	100,000
Tsingpu	93,000
Wukiang	——
Kunshan	131,000
Paoshan	417,000
Taitsang	316,000
Wusih	91,000
Wuchin	69,000
Liyang	42,000
Lishui	26,000
Chuyung	22,000
Luho	28,000
Chinkiang	53,000
Tanyang	91,000

Taihsing	73,000
Kaoyü	—
Huaian	—
Ssuyang	—
Suining	47,000
Hsiaohsien	181,000
Fenghsien	32,000
Peihsien	56,000
Tunghai	21,000
Kuanyun	28,000
Founing	163,000
Hsinghua	231,000
Tungtai	630,000
Jukao	—
Nantung	2,294,000
Chitung	468,000
Taihsien	329,000
Tsingkiang	206,000
Haimen	933,000
Total	11,088,000

OUTPUT

The output of cotton per *mou* is smaller than that in some provinces in the north, because foreign cotton is planted in the north, while in Kiangsu, the climatic condition is not suitable for imported seeds. Foreign cotton yields much higher crop than that of domestic cotton. According to investigations of the Chinese Cotton Mill Owners' Association, Shensi has the largest output per *mou*. Below is given the output (in catties) per *mou* of the eleven cotton-producing provinces from 1919 to 1929:—

	'19	'20	'21	'22	'23	'24	'25	'26	'27	'28	'29
Hopei	41.9	23.3	38.6	29.8	26.0	26.0	33.1	33.4	30.9	31.4	31.2
Shantung	27.8	29.4	12.6	28.4	37.7	31.4	32.1	15.7	22.3	18.1	28.6
Shansi	41.5	10.6	35.8	19.6	26.3	26.2	21.3	27.0	38.6	30.4	12.7
Honan	30.2	—	25.6	18.2	24.8	21.5	18.2	19.3	20.9	13.7	13.4
Shensi	—	22.9	17.9	25.5	27.1	28.5	58.6	25.6	24.8	20.7	18.4
Kiangsu	14.3	24.2	10.9	25.5	18.2	35.1	28.7	23.6	22.3	28.8	23.9
Chekiang	—	19.8	25.8	9.0	27.9	36.1	28.5	18.8	30.5	20.0	24.5
Anhui	16.5	24.4	15.0	13.5	16.5	14.8	25.9	29.1	29.5	29.4	17.9
Kiangsi	—	24.5	17.7	23.4	24.9	22.3	23.6	22.6	24.1	21.5	35.2
Hupeh	—	25.2	21.6	26.7	21.7	17.4	17.0	21.9	21.4	27.8	13.5
Hunan	—	—	—	—	—	—	—	—	—	—	28.2
Average	27.3	23.8	19.2	24.8	24.2	27.1	26.8	22.5	24.3	25.9	21.3

In the following is reproduced the report of the output per *mou* in some districts in Kiangsu (in 1931) by the same Association:—

	Mou
Nantung	1,927
Jukao	1,712
Taihsing	2,025
Tungtai	20
Founing	20
Changshu	15
Kiating	13
Paoshan	12
Fenghsien	28
Chitung	2,139
Chinshan	15
Shanghai Municipality	30
Haimen	1,935
Tsungming	30
Tsingkiang	20
Yencheng	20
Kiangyin	15
Taitsang	15
Shanghai	30
Nanhui	37
Chuansha	30
Sungkiang	20
Tsingpu	20

According to the latest report, made on December 15, 1932, of the 8,094,863 piculs of cotton produced in the twelve provinces in China, Kiangsu contributing 1,769,860 piculs, or 21.86 per cent of the total. According to the revised estimate of 1931, China's aggregate output of cotton is 6,339,780 piculs, that from Kiangsu being 626,480 piculs, or 9.79 per cent of the total. The following is the estimate of the output of cotton of the twelve provinces in 1931 and 1932:—

	1932		1931	
	Piculs	Percentage of the Total	Piculs	Percentage of the Total
Liaoning	——	——	177,680	2.78
Hopei	1,283,197	15.85	844,000	13.29
Shantung	1,769,354	21.85	2,154,882	33.67
Shansi	54,128	0.67	81,728	1.28
Honan	599,321	7.41	644,544	10.07
Shensi	157,884	1.95	346,319	5.41
Hupeh	1,634,350	20.19	1,037,002	16.20
Hunan	199,764	2.47	45,292	0.71
Kiangsi	45,822	0.57	8,920	0.14
Anhui	164,327	2.03	43,050	0.67
Kiangsu	1,769,860	21.86	626,480	9.79
Chekiang	417,164	5.15	389,883	6.09
Total	8,094,863	100.00	6,399,780	100.00

A rapid increase in the cotton output of Kiangsu is seen from the above table. The figure for 1932 exceeding that of 1931 by 1,143,389 piculs, the percentage also rising from 9.19 for 1931 to 21.86 for 1932. The increase of cotton output of Kiangsu jumping from the fourth largest producer of cotton in 1931 to the first in 1932., is not due to the increased acreage so much as to the improved crop. The following table shows the estimate of the output of cotton in various districts in Kiangsu in 1932:—

	Piculs
Nanhui	500,000
Sungkiang	200,000
Shanghai	120,000
Chinshan	70,000
Fenghsien	205,000
Chuansha	100,000
Tsingpu	115,680
Kunshan	25,000
Kiating	231,818

Tsungming	110,000
Changshu	13,500
Ihsing	8,000
Kaoshun	500
Chuyung	210
Luho	5,000
Tanyang	500
Ssuyang	500
Suining	20,000
Hsiaohsien	12,950
Fenghsien	953
Lienshui	6,350
Yencheng	20,000
Tsingkiang	159,850
Haimen	304,230
Paoshan	102,500
Taitsang	446,000
Kiangyin	60
Liyang	1,850
Kiangning	60
Kiangpu	20,000
Chinkiang	800
Taihsing	45,500
Suchien	15,000
Tungshan	44,940
Tangshan	26,150
Peihsien	348,000
Founing	80,000
Tungtai	439,480
Nantung	740,000
Chitung	49,000
Total	4,628,191

It is to be noted here that the above estimate is made according to the circumstances existed at the time of investigation before the harvest of the crop.

According to the figures given by the Chinese Cotton Mill Owners' Association the total output of cotton in Kiangsu in 1929 is 2,276,000 piculs, in 1930, 1,084,000, in 1931, 620,000, and 1932, 1,668,000. The following table gives the share each cotton-producing district contributes:

	1932 (Piculs)	1931 (Piculs)	1930 (Piculs)	1929 (Piculs)
Nanhui	150,677	71,200	117,726	238,680
Sungkiang	39,600	13,800	40,320	14,880
Shanghai	64,680	12,870	23,760	36,557
Chinshan	5,175	3,009	5,676	10,710
Paoshan	44,922	8,169	22,824	58,752
Taitsang	11,761	27,868	59,976	145,600
Fenghsien	54,694	22,324	72,360	65,340
Chuansha	22,770	11,385	26,040	38,468
Tsingpu	26,600	5,580	4,945	36,057
Kiating	79,926	11,414	48,537	105,009
Tsungming	166,400	42,476	87,500	140,000
Changshu	164,500	23,620	61,976	142,080
Kiangning	——	4,455	7,600	36,000
Shanghai Municipality ..	——	24,750	39,984	——
Fenghsien	12,710	——	——	——
Yencheng	24,000	10,684	19,195	47,80[illegible]
Taihsien	——	——	825	15,840
Tsingkiang	79,072	7,425	13,781	22,050
Haimen	63,813	53,570	78,409	136,620
Kiangpu	——	——	1,056	6,386
Taihsing	3,596	58,400	1,064	1,800
Founing	53,286	6,697	12,864	42,000
Tungtai	84,000	27,720	52,500	120,000
Jukao	97,580	30,705	63,560	223,988
Nantung	270,594	98,483	102,805	508,546
Chitung	45,375	49,876	118,496	83,400
Total	1,668,731	626,480	1,084,835	2,276,613

The Statistics Department of the Legislative Yuan had made the same investigation for 1930, the results being as follows:—

	Catties
Nanhui	23,436,000
Sungkiang	5,984,000
Shanghai	9,756,000
Chinshan	1,565,000
Wuhsien	——
Kiating	11,535,000
Tsungming	13,157,000
Changshu	13,573,000
Kiangyin	6,090,000

Ihsing	812,000
Kaoshun	389,000
Kiangning	772,000
Kiangpu	409,000
Icheng	756,000
Chintan	187,000
Yangchung	437,000
Kiangtu	——
Paoying	——
Fenghsien	7,267,000
Chuansha	2,988,000
Tsingpu	1,951,000
Wukiang	——
Kunshan	3,012,000
Paoshan	10,416,000
Taitsang	8,207,000
Wusih	2,012,000
Wuchin	——
Liyang	960,000
Lishui	816,000
Chuyun	439,000
Luho	639,000
Chinkiang	1,055,000
Tanyang	3,084,000
Taihsing	2,263,000
Kaoyu	——
Huaian	——
Huaiyin	——
Suchien	361,000
Tungshan	9,168,000
Tangshan	1,969,000
Peihsien	1,411,000
Shuyang	——
Kangyu	——
Lienshui	533,000
Yencheng	3,705,000
Tungtai	18,900,000
Jukao	——
Nantung	55,056,000
Chitung	14,976,000
Ssuyang	——
Suining	1,258,000

Hsiaohsien	5,057,000
Fenghsien	872,000
Peihsien	1,692,000
Tungshan	546,000
Kuanyun	974,000
Founing	4,404,000
Hsinghua	7,631,000
Taihsien	9,535,000
Tsingkiang	5,347,000
Haimen	32,639,000
Total	311,620,000

CONSUMPTION AND MARKETING

Formerly cotton was used principally for household spinning, weaving and lining winter clothes and beddings. Since the development of cotton industry large portion of raw cotton is absorbed by those mills. As a result, cotton trade grows in places where cotton mills prosper. Cotton from Northern Kiangsu is largely shipped to Nantung, because that district not only commands water transportation facilities but consumes very large quantities of cotton by the existence of the Ta Sheng Cotton Mill (大生紗廠), while cotton from Southern Kiangsu is gathered at Shanghai, where about one-third of the cotton used in China is consumed. Wusih with a fairly large number of cotton mills consumes a considerable amount of Changshu and Kiangyin cotton. In addition to cotton mills, the weaving of nankeen at Nantung and Kiangyin draws a large bulk of cotton from various districts. Imported cotton from the United States and India is also gathered in Kiangsu and then distributed.

The following table shows the percentage of cotton consumed locally and the principal markets outside the producing district:—

	Percentage Consumed Locally	Principal Market.
Nanhui	50	Shanghai
Sungkiang	14	Shanghai
Shanghai	100	———
Chinshan	70	Shanghai
Kiating	15	Shanghai
Tsungming	100	———
Changshu	50	Shanghai, Wusih, Wuhsien
Ihsing	100	———
Kaoshun	100	———
Chuyung	100	———
Luho	100	———
Tanyang	60	Shanghai
Huaian	100	———
Suchien	100	———
Tungshan	100	———
Tangshan	50	Wusih, Shanghai
Peihsien	100	———
Founing	10	Shanghai, Nantung
Tungtai	10	Nantung, Shanghai, Wusih
Tsingkiang	15	Wusih
Haimen	6	Shanghai
Fenghsien	25	Shanghai
Chuansha	20	Shanghai
Tsingpu	10	Shanghai
Kunshan	15	Shanghai
Paoshan	30	Shanghai
Taitsang	80	Shanghai, Wusih
Kiangyin	100	———
Liyang	100	———
Kiangning	100	———
Kiangpu	8	Shanghai, Wusih
Chinkiang	100	———
Taihsing	40	Shanghai
Ssuyang	100	———
Suining	50	———
Hsiaohsien	70	Tungshan
Fenghsien	30	Tungshan
Lienshui	20	Tsingkiangpu
Yencheng	20	Nantung, Shanghai, Wusih
Jukao	50	Shanghai, Nantung
Nantung	40	Shanghai, Wusih
Chitung	4	Shanghai

Kiangsu, the centre of cotton trade in China, is the point at which not only cotton from the Upper Yangtse, but that from the northern provinces like Shensi, Hupeh,

Honan, Hopei, Shansi, and Shantung is gathered for either local consumption or re-exported. Imported cotton from the United States and India is also gathered in Kiangsu and then distributed.

TRANSPORTATION AND PACKING

The Yangtse River, Whangpoo River, Soochow Creek, and a network of waterways render water transportation most convenient, and the Nanking-Shanghai and Shanghai-Hangchow-Ningpo railways connect Shanghai with importants cities and towns in Kiangsu and other provinces, making Shanghai the most important cotton trade center in China. Since the abolition of likin cotton freight has been reduced so much that it costs only about 20 cents to transport a picul of cotton from Taitsang to Shanghai.

The following figures show the number of bales of cotton exported from various districts in Kiangsu:—

	Piculs
Nantung	800,000
Haimen	340,000
Tsungming	300,000
Taihsing	15,000
Tsingkiang	25,000
Tungtai	50,000
Taihsien	22,000
Yencheng	8,600
Founing	4,500
Hsinghua	5,000
Lienshui	3,000
Kiangyin	60,000
Changshu	150,000
Taitsang	95,000
Kiating	70,000
Paoshan	40,000
Nanhui	190,000
Fenghsien	95,000
Chuansha	3,000
Tsingpu	2,000

For conveying cotton from Shensi to Shanghai three different routes are open, one via Tungshan by the Lunghai Railway to Tapu (大浦), thence by sea to Shanghai. Formerly cotton was carried from Tungshan to Shanghai by the Nanking-Shanghai line, but this route is not used as much as formerly owing to the comparatively high

freight. The second route is by way of Chengchow to Hankow via the Peiping-Hankow Railway, and thence by steamer to Shanghai. The third route is to send the shipment to Hankow by the Han River, then to Shanghai by steamers. Cotton from Hupeh is transported to Shanghai principally by the Yangtse River, freight charged by steamship companies ranges from seven to eight taels per ton. Cotton from various producing districts in Honan is concentrated at Chengchow, and is then sent to Shanghai mostly via Tungshan by train with a small portion via Hankow by steamer. Cotton produced in districts in Hopei and Shansi along the Tientsin-Pukow and Peiping-Hankow lines finds ready markets in Tientsin and Shihchiachuang (石家莊)* Owing to the large number of cotton-mills in the former place, the greater part of Hopei and Shansi cotton is consumed there, and little is exported. The freight from Tientsin to Shanghai is Tls. 10.10 per ton. Two routes are usually open for transporting Shantung cotton to Shanghai, one by way of the Tientsin-Pukow line, and another via Tsingtao. Most of this cotton is shipped from the latter place at a freight of Tls. 0.88 per picul. Cotton grown in districts west of Tsao-E Kiang (曹娥江) is brought to Shanghai either by train via Hangchow, or by steamers via Pinghu (平湖), while cotton from districts east of that river is transported to Shanghai via Ningpo by train or via Chenhai (鎮海) by steamer. The freight from Ningpo to Shanghai is about 48 cents per picul. Most of the Kiangsi cotton is marketed at Kiukiang, and then sent to Shanghai, the freight being Tls. 2.24 per picul.

There is no uniformity in size and weight regarding the cotton bale. In Huaiyin, Lienshui, Kuanyun, etc. a bale of cotton weighs from over 100 to 150 catties, while in Kaoyü the difference is still bigger, a bale sometimes weighing about fifty catties, and sometimes 150 catties. Even the "picul" is not a definite weight, because it may mean over 400 catties in some places although it is usually understood as 100 catties. The following table gives a general idea about the packing of cotton in different districts:

	Material	Weight	Value of the bale	Scale
Nautung, Haimen.	Cloth, Rush	Cloth 125 catties; rush 100 catties	Cloth 90 cents each, rush 10 cents each, cord 8 cents.	Ssu Ma (司馬, 16.8 liang to a catty.)
Tsungming, Jukao, Taibsing Tsingkiang	Cloth, rush, gunny	Seed cotton 60-80 catties, ginned cotton 125 catties	Cloth 85 cents, rush 10 coppers, gunny 50 cents.	Ssu Ma.
Tungtai, Yencheng, Hsinghua, Founing, Paoying, Huaian	Cloth, rush, gunny	125 catties	Cloth $1.20, rush 20 cents, Gunny 50 cents, cord 4 cents	Ssu Ma (17 liang to a catty.)
Huaian, Lienshui Kiangning	Reed.	100—150 catties	50 coppers.	
Kiangtu	Gunny	200—250 catties	Gunny 50 cents, cord 5 cents	Ssu Ma.
Kaoyu	Bamboo, gunny	50—150 catties	$0.5—1.	Ssu Ma.
Kiangyin, Tsingpu, Kiating Taitsang, Changshu	Rush,	Seed cotton 100 catties, ginned cotton 75 catties	Rush 20 cents, cord 3 cents.	Tang Scale (塘秤, 21.6 liang to a catty.)
Shanghai, Fenghsien, Paoshan	Rush, gunny, cloth.	Seed cotton 60-70 catties, ginned cotton 125 catties	Rush 20 cents, gunny 50 cents, cloth 70 cents	Ssu Ma (14.4 liang to a catty.)
Nanhui	Gunny, rush	Seed cotton 70 catties, ginned cotton 40 catties	Gunny 50 cents, rush 20 cents, cord 2 cents	Local Scale (14.4 liang to a catty.)

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TRANSACTIONS

To finance the cultivation of cotton the farmers usually mortgage their next year's output to rice merchants, cotton brokers, or money lenders. The cotton is to be sold to the creditor in August, September, October, or November at prices fixed before hand, which is usually much lower than the current market price. The following figures show the market price (per picul) at the various producing districts:

Nanhui	$12.0	Chitung	45.0
Sungkiang	20.0	Wukiang	—
Shanghai	16.0	Kunshan	—
Chinshan	12.0	Paoshan	13.0
Wuhsien	—	Taitsang	15.0
Kiating	15.0	Wusih	—
Tsungming	18.0	Wuchin	—
Changshu	20.0	Liyang	13.0
Kiangyin	35.0	Lishui	—
Ihsing	12.0	Chüyung	15.0
Kaoshun	12.0	Luho	40.0
Kiangning	20.0	Chinkiang	15.0
Kiangpu	35.0	Tanyang	16.0
Fenghsien	12.0	Taihsing	16.0
Chuansha	14.0	Kaoyu	—
Tsingpu	20.0	Huaian	14.0
Suchien	40.0	Ssuyang	35.0
Tungshan	10.0	Suining	34.0
Tangshan	8.0	Hsiaohsien	10.0
Lienshui	30.0	Fenghsien	10.0
Yencheng	2.00	Peihsien	16.0
Tungtai	13.0	Founing	12.0
Jukao	45.0	Tsingkiang	18.0
Nantung	16.0	Haimen	12.0

Cotton business is usually done on festival days. Sometimes brokers come between the cotton growers and *hongs* in the transaction of business, charging a certain amount of commission. Cotton *hongs* in Kiangsu are found in cities and towns in the neighbourhood of cotton producing districts, buying seed and ginned cotton, some even ginning cotton themselves.

Consignments are delivered either at the godown or the mill in Shanghai, the price being different in the two cases. Payments are made usually with a ten-day native bank

order after delivery is effected. In the event of financial stringency the seller may request their clients to pay from seventy to eighty per cent of the total after the delivery of goods, ten days' interest being discounted if cash is wanted. There is no direct connection between cotton buyers and sellers in the transaction of business, between the two being the brokers. Contracts are usually made after both parties come to terms.

The following table shows the highest and lowest prices in Shanghai from 1923 to 1930:—

	1923		1924		1925		1926	
	Lowest	Highest	Lowest	Highest	Lowest	Highest	Lowest	Highest
Jan.	36.00	41.10	46.35	48.35	39.80	41.10	31.75	34.45
Feb.	40.70	45.00	41.80	47.30	39.25	42.70	31.30	34.60
Mar.	34.00	43.20	40.50	45.80	41.95	44.55	29.05	34.00
Apr.	38.00	39.00	39.95	48.50	40.05	43.50	28.75	33.00
May	—	—	38.35	47.25	37.20	41.90	26.90	31.00
June	32.30	35.25	38.70	47.35	37.90	43.05	27.50	31.20
July	31.90	36.95	36.50	50.00	37.45	42.75	29.35	33.35
Aug.	31.90	36.00	36.80	51.50	36.30	40.30	30.15	33.15
Sept.	33.05	39.10	34.60	42.60	36.05	42.00	30.95	32.35
Oct.	35.15	45.50	35.20	38.60	34.45	39.35	29.50	32.00
Nov.	42.00	49.50	36.50	41.00	34.35	36.90	27.50	30.40
Dec.	44.60	49.55	38.35	40.80	31.05	35.30	27.65	28.90

	1927		1928		1929		1930	
	Lowest	Highest	Lowest	Highest	Lowest	Highest	Lowest	Highest
Jan.	28.05	29.50	32.45	33.50	33.60	36.50	34.45	36.55
Feb.	28.00	31.85	32.90	33.75	33.00	36.70	34.08	36.00
Mar.	30.55	33.45	33.05	34.45	35.85	38.90	34.35	35.70
Apr.	30.10	32.60	33.10	35.30	37.50	39.65	35.00	36.55
May	31.45	36.05	30.55	33.25	37.15	40.05	34.65	35.65
June	33.40	35.60	30.55	32.25	36.90	39.95	35.20	37.40
July	—	—	30.05	31.70	38.00	40.75	34.70	36.40
Aug.	—	—	31.40	32.75	33.35	37.70	31.90	35.75
Sept.	—	—	—	—	32.15	34.20	31.90	33.05
Oct.	—	—	32.45	33.15	32.75	34.90	31.05	33.65
Nov.	33.40	37.40	32.60	34.35	32.70	33.90	31.80	33.10
Dec.	32.50	36.20	32.50	33.65	32.30	33.85	31.35	35.00

SUPPLY AND DEMAND

There are twenty-five districts that produce cotton more than enough to meet the local demand, while those districts depending on others for cotton are largely cotton spinning and weaving centres.

The demand of cotton by the Kiangsu Province is so large that its own product is far from being sufficient to meet its own demands. Cotton mills in Shanghai alone take about 4,900,000 piculs annually, exclusive of that used for other purposes, while the import of cotton into Shanghai in recent years is only about two-fifths of that. For instance, in 1930 only 1,712,519 piculs were imported. To fill up the gap foreign cotton is imported to quite large an extent.

CHAPTER VIII

COCOON TRADE

THE SILK production in China has been known since the the beginning of the Chinese history. For centuries, the export of Chinese silk has been the chief item in China's foreign trade, and known practically to all parts of the world.

Sericultural industry in China is especially developed in the Yangtse and Pearl River vallies, where climatic condition is most suitable for the growth of mulberry trees and rearing of silkworms. The provinces of Kiangsu, Chekiang, Anhui, Kiangsi, Hunan, Hupeh, Szechuen and Kwangtung have long been the area of silk production, Chekiang and Kiangsu, particularly, being the most important producing centres. In Kiangsu Province, this domestic industry may be found in every district, especially in districts of the Yangtse River.

THE PLANTING OF MULBERRY TREE

There are three chief kinds of mulberry trees grown in Kiangsu Province, *lusang* (魯桑), *chingsang* (荊桑) and *husang* (湖桑). They are called by many other names such as mountain mulberry, etc. The planting method is different in every locality as to the soil and custom of the farming districts. The life of a mulberry tree is about 20 to 30 years. There is no standard in height. It is usually fertilized by human manure or river mud. The winter-cutting is not uniform, a different system being employed everywhere. The production of mulberry leaves is, therefore, various in grade and quantity, usually from 5 to 15 piculs per *mou* per year. The total cultivated land for mulberry planting has been estimated at one million *mou* in the whole Province. This number cannot be accurate because many farmers failed to keep up their plantation on account of falling prices, especially in the present depression of silk industry. The situation seems to be, in most of the time, undersupplied.

Farmers usually produce mulberry leaf and at the same time take care the silkworms at their farmhouse. A majority of them have mulberries for sale at prices of about two dollars per picul. Sometimes, the buyers contract with the producers to buy in advance and the price may be a little lower. Otherwise the mulberry supply can only be obtained from the leaf *hong*. The latter may advance money to those who have no working capital for the purchase, but the loan must be paid off after the sale of cocoons. The *hong* acts merely as a middleman and collects dues or interests from the loan. Farmers usually do not have adequate capital, and very few possess more than $700. The financing by the *hong* seems necessary.

SILKWORM REARING

During the cocoon season, every family in the producing area is engaged in the feeding of silkworms, which is a most popular side-line of farmers. In fact, thousands of farmers are depending upon the income from this source. The method of rearing is not scientific, and the centuries' old custom is still observed. Very little improvement has been made by the farmers in this important industry.

There are two cocoon crops a year. The spring crop matures much more slowly than the summer crop. The necessary time for a generation is varied as to difference in species and weather. The European variety of silkworm takes about 33 to 34 days, the pure Chinese type about 30 days, while other types about 31 to 32 days. The Japanese species take ordinarily one day longer than the Chinese. In the autumn or late-summer season, the maturing period is much shorter than that in spring. It usually takes 23 or 24 days, because of the warmer weather. Modern equipments for the industry are rarely used by Chinese farmers, their high prices making them ill afford. A cocoon house is very much like an ordinary house. In fact many farmers are living inside the cocoon house. The old hand-made wooden equipment can be found the same in everywhere.

Species of silkworm are many, only the Chinese species is widely used. The improved species was introduced only about a decade ago. In 1928, the Bureau of Agriculture and Mining of the Provincial Government made an investigation

on cocoon situation, and the result of which shows that there were about 80 per cent of eggs used is of Chinese species, 15 per cent modified native species and 5 per cent new improved species. The selection of species is very important, which effects both quantity and quality of silk production. The effectiveness may be seen in the following comparative table:

PRODUCTIVITY OF SILKWORM

	The Improved Species	The Indigenous Species
Price per sheet	$0.80	$1.50
Number of moths	28	300
Number of Young Worms	10,000	100,000
Mulberry feeding	3 or 4 piculs	40 or 50 piculs
Cocoon	20 catties	200 catties
Raw silk produced	6 catties	32 to 34 catties

The price of raw silk produced by the improved species is 10 to 20 cents higher per catty than those by the Chinese species. Eighty per cent of the silk crop may be expected in average years.

SILKWORM NURSERY

According to the Provincial Department of Agriculture and Mining, there were 115 silkworm nurseries in Kiangsu in 1931. Most of them are located in Wusih, Chinkiang and Ihsing. They may be classified into public, educational, and private nurseries. The public institution are founded by provincial or district government, and supported by public funds. The educational nuseries are established by technical colleges and other educational institutions in the Province. The private establishments are organized largely as a commercial enterprise, and may be a partnership or an incorporated business. The capitalization for private nurseries runs from $2,000 to $100,000, the average capital for each being about $10,000.

Every silkworm nursery has its mulberry field. The fields either owned by or leased to the nursery organizations are usually very large in sizes. The Yung Tai (永泰) Number One field has an area of 600 *mou*; Jui Chang

(瑞昌), 240 *mou*; San I (三益), 300 *mou*. These fields are mostly planted with *husang*. Mulberry leaves are picked twice a year in both spring and autumn seasons.

The silkworm nurseries are equipped mostly with modern instruments except those of small organizations primarily for educational purpose. The best equipped nurseries are the Yung Tai No. One Nursery at Chiao-tou-chen (橋頭鎮), the Ta You (大有) at Huhsukuan (滸墅關) the Ta Fu (大福) in Kiangyin, the Yu Min (裕民) in Chinkiang and the Hsin Su (新蘇) Wuhsien. Several other organizations have also installed cold storage as it is necessary for keeping the silkworm eggs. The paper holding the eggs is imported from Japan. Since the boycott of Japanese goods, difficulty is found to get the necessary supply. The cost of silkworm eggs per sheet is varied as to scale of production. The large nurseries produce in large quantities and sell them at considerable lower prices, usually at 70 or 80 cents per sheet. The late-summer eggs is sold at 10 cents less.

Every nursery has a specialist directing the affairs in the organization. Some of these specialists are graduated from colleges with technical training along this line, others from technical schools or promoted from assistant rank in the nurseries. Beside the managing specialists, there may be several assistants or students working their ways for training in the nurseries, receiving lessons from the director or other technicians in the laboratory. It takes two or three years to complete the training. Students are provided with free room and board, and sometimes subsidies are given for their works.

Salaries in silkworm nurseries runs from $20 to $100 per month. The average wages for workers is $12 or $13 per month. In busy seasons, extra labor is required, for which 35 to 40 cents per day is paid to man worker, 25 to 30 cents to woman worker. From Changan (長安), Chekiang, come the majority of day laborers. Laborers from this district are skillful and particularly adopted in this type of work.

GOVERNMENTAL RESTRICTIONS

The Bureau of Cocoon Inspection was established in April, 1930, by the Kiangsu Government. The Province is divided into several sections, each supervised by an inspector. In the inspector's office, a staff of about 56 men is engaged in the work. Many restrictions have been recently imposed to guard the benefit for farmers and to promote better quality in silk production.

MARKETING

After the cocoon season, some farmers keep all or part of their output which they bake and filature at home themselves. Some do their own reeling and weaving. In majority of cases, farmers sell the entire cocoon crop to the local buyers, cocoon or silk dealers, or shipped to Shanghai which is the centre of silk trade.

The cocoon trade fluctuates seasonally. The business in the summer season is lighter than in spring and autumn. The cocoon *hong* usually are active and heavy transactions are done in the cocoon season. These *hong*, established in all parts of the Province, collect cocoons from local markets and shipped to Shanghai. It also acts as a middleman in the cocoon trade. The slump in silk industry affected most seriously the local dealer, and many of them are suspending operation at the present time. The total number of dealers may be estimated at two or three hundred. No statistics have been compiled since the last few years.

In this Province, the largest number of cocoon *hong* is formed in Wusih, occupying about 40 per cent of the total number in the Province. Wuchin comes second with about 20 per cent. Others including Haimen, Tanyang, etc. have also a number of *hongs* established.

The cocoon *hongs* may be classified into partnership and single proprietorship with the former in majority. The *hong* capitalization ranges from six thousand to sixty or seventy thousand dollars, the majority being between ten and twenty thousand dollars.

The cocoon business has suffered a depression since the last few years. Price began to drop in 1929, and the lowest price was recorded in 1932. The market price of fresh cocoon for the five years' period may be gathered as follows: $48 to $50 per picul in 1927, $50 to $53 in 1928, $52 to $55 in 1929, $47 to $48 in 1930, $43 to $52 in 1931, $23 to $30 in 1932.

The rate of tax levied on cocoons before the establishment of the Republic was $4 per picul of fresh cocoon, and $12 per picul of dried cocoon. Since the advent of the Republic, the tax has been readjusted several times. After the Revolution, the rate was changed to $6 per picul of dried cocoons. Later, this was again changed to $11, and $3.66 picul of fresh cocoons. In 1916, it was reduced to $9 plus one dollar from Shanghai tax, while the fresh cocoon taxed at $3. The collection was made by tax office established in the cocoon-districts during the cocoon seasons. The present rate of two per mille *ad valorem* has been imposed since 1931 in the form of business tax.

CHAPTER IX

FRESH FRUITS

UNLIKE any province in the southern part of the country, Kiangsu produces only a limited variety and quantity of fresh fruits. The following paragraphs give details of fruit production in various districts of the Province.

Wuhsien—To the north of Taihu Lake, the Machishan (馬跡山) territory is famous in producing *yang-mei* (楊梅) the annual output of which valued at $100,000. The Tungtingshan (洞庭山) area also produces this fruit, but white in color and not as much in production as Machishan. The Chinese plum called *tsing-mei* (青梅) and *hsiao-mei* (消梅) are produced in Kuangfu (光福) of the same district. The plums are sold mostly in candy stores, and the annual production is worth over $50,000. The Kuangfu area produces also peach, apricot, plum, date, pomegranate, grape and persimmon but only in moderate quantities.

Loquat or Pi-pa (枇杷) are grown in the Tungtingshan area, which supplies the fruit market in considerable amount every year. There is a great variety of loquat in Wuhsien. It has been estimated that there are 10,000 loquat trees and produced annually $60,000 worth of fruit. Pomegranate is produced in the western hills of the same area and is a table delicacy worth mentioning.

Shanghai—Peach is produced in Lunghua (龍華) in large quantities. Along its southwestern territory as Changchiao (長橋), etc. peach trees cover many *mou* of land. Tanghsiang (唐巷) and Luchiahsiang (陸家巷) within the territory are particularly suitable for growing peach, the largest plantations benig the Nan-hua (南華) and Fang-Yuan (芳園), each having an area of about 20 to 30 *mou*. There is a great variety of delicious peaches grown in this district, called by many different names, and the

output is supplied to the nearest market, Shanghai. Although grape, fig, persimmon, and chestnut are grown in this district, they have not developed as yet to supply to the fruit market.

Fenghsien is famous for its dates output of which is about 300 catties a year. Olives, peaches, oranges and pears are also produced here but not in any considerable quantity.

Tsingpu produces chestnuts in a considerable amount. Besides, date, apricot, etc. are also grown in this district.

Chinshan is favorable to produce lychee of nearly all varieties. It is the only district that supplies the market with this kind of fruit in the Province.

Tungshan produces grape, peach, persinmon, pomegranate, apricot and pear. It is the chief pear producing area in the Province. The annual output is estimated at 48,000 piculs. According to statistics of 1931, there were 10,000 *mou* of land for pear planting, of which the area for aged trees occupied 8,000 *mou* with approximately 64,000 trees, and the area for younger trees covered 2,000 *mou* with about 18,000 trees. Other districts in the Province also produce fruits of different kinds and varieties. Their production is, however, to supply the local demands, and so it is not popular in the fruit market.

The consumption of fruit in Kiangsu Province, where there is a comparatively dense population and high living standard, is more than in any other province. Its production cannot meet the demand, and so it depends upon imports from other provinces and foreign countries. Pears are imported from Shantung and Hopei; apples from Shantung, Japan, Korea and the United States; orangs from Kuangtung and the United States; *Citrus magarita* or *kan* (柑) from Kuantung and Fukien Provinces. The import of orange alone into Shanghai in 1928 was worth Hk. Tls. 392,128. This compared with the figure of 1925 which was Hk. Tls. 107,629, has increased nearly four times. The import of lemon from the United States has also increased from Hk. Tls. 96,523 in 1925 to Hk. Tls. 126,812 in 1928; while the import of apple increase from Hk. Tls. 188,514 in

1925 to Hk. Tls. 204,878 in 1926. Japanese apples are sold at exceedingly low prices on Chinese markets in the last few years, and it affects not little the home production as far as Kiangsu Province is concerned. Thus, it can be seen that the value of fruits consumed in Kiangsu reaches approximately ten million dollars annually, 70% of it being imported from other provinces or foreign countries.

No statistics of fruit production are available. According to the results of our investigations, the approximate output of fruits and nuts last year is estimated as follows:

	Piculs
Peach	192,210
Apricot	19,200
Pomegranate	13,060
Grape	700
Loquat	48,350
Pear	42,710
Plum	4,500
Strawberry or *Yang Mei*	22,880
Tangerine	450
Cherry	1,200
Huahung (花紅)	4,490
Gingko nut	8,158
Chestnut	9,630
Melon seeds	80,900
Water caltrop	318,970
Lotus root	1,223,640
Lotus seeds	100,120

CHAPTER X

HORTICULTURE

THE FAVORABLE weather and fertile soil in Kiangsu Province is very suitable for horticulture, especially in area between Nanking and Shanghai, where the weather is warm and damp all the year long. The territory near Tungshan is also exceedingly rich for vegetable and flower planting, with the soil deposited from the sediment brought down by the Yangtse River.

VEGETABLES

There are more than fifty different varieties of vegetables grown in this Province, and different vegetables are supplied in every season They are consumed by the mass of people as part of daily food. There are also several kinds of vegetable of foreign origin, such as potato, tomato, etc. growing in districts along the Nanking-Shanghai Railway.

The marketing center of vegetable is in the cities. Shanghai city alone, as having more than three million population, consumes over ten million dollars worth of vegetables a year. In the country and farming districts, vegetable is usually planted by housewives, and every household can supply its own need. In the Kiangsu Province, with its over thirty million population, the amount of vegetable consumed would reach $120,000,000 a year averaging about $4.00 per person per year, besides certain amount exported to other provinces. This indicates the importance of supply of vegetables, which deserves consideration in making improvement and increasing productions.

FLOWER

There are several hundred varieties of flowers found in this Province, and most of them are grown during the period between April and June. Shanghai, Wuhsien Kiangtu and Nanking are the centers of flower production. Many foreign species have been adopted in planting in the educational institutions and public parks, and they all prove to be successful. The chief consuming center is Shanghai City where flowers become increasingly popular in all occasions.

NURSERY

Before the Shanghai "War," there were more than one hundred nurseries and several fine private gardens in the Kiangwan district. During the war, many of them were destroyed. These nurseries are not in the paying scale in their business operation.

CHAPTER XI

OTHER AGRICULTURAL PRODUCTS

TEA

KIANGSU Province produces comparatively a little amount of tea. Among its 61 districts, only nine, Wusih, Wuhsien, Tanyang, Chuyung, Kiangning, Ihsing, Chintan, Lishui, and Nanhui are producing in fairly large quantities. The most popular tea in this Province is the *Pilochun* (碧螺春) produced in the Tungting Hills of Wuhsien and *Hsuehlang* tea (雪浪茶) produced in Hsuehlang Hill of Wusih. *Shou-mei* (壽眉) and *Lung-ching* (龍井) are produced in Nanhui. The Ihsing Tea (宜興茶) or *Yang-hsien* tea (陽羨茶) has been famous for many centuries. In the Ming Dynasty area in Kiangsu devoted to tea planting was recorded at more than 46,000 *mou*, but this branch of farming has decreased in popularity among farmers. The farmers in Ihsing are not specialized in tea production, and the annual output has now reduced to minimum. In Tsingpu district, there produces no tea, but the natives are highly specialized in the tea-baking process. They usually obtain Lungching tea from Chekiang and *maochien* (毛尖) from Anhui, which they baked and packed for the tea markets in Kiangsu. In the districts around the Taihu territory, the output for local demand is estimated at 5 or 6 hundred thousand catties a year, and the same quantity is produced in Kiangning, Chuyung, Chintan, Liyang, Lishui, etc.

The Maolu Co. at Chintan has a tea plantation of over 1,000 *mou*, the Ihsing Vocational school, a plantation of over 500 *mou*, while a tea garden is also being planned near the Chungshan Mausoleum.

Tea production in this Province is only a sideline of farming. Farmers usually pick tea as it grows, and pay little or no attention to the planting. The old

method of baking and packing are not scientific, not to say of large scale production. The amount of tea for marketing is, therefore, very limited. Taking the Province as a whole, the tea supply is far behind the amount of demand. Besides the several districts that produce sufficient for local consumption, only Wuhsien, Kiangyin and Tsingpu are actually producing tea for the market. The tea markets in the Province are Shanghai and other cities of larger population. However, tea consumption in the Province, excluding Nanking, may be estimated annually 250,000 piculs valued at $5,000,000. Only one half of this amount is produced in the Province; the other half is supplied by Chekiang and Anhui Provinces.

TOBACCO

Production of tobacco in Kiangsu is only of minor importance, quantity produced being very small. In Kiangsu Province, tobacco is produced in Tsingpu, Suchien, Hsiaohsien, etc. The Tsingpu product has four main varities called *Yu-chi* (玉琪), *Yu-kui* (玉桂), *Yu-chao* (玉潮) and *Yuchiu* (玉秋), all of which are high quality leaf but limited in quantity. The Suchien tobacco is yellow in color, produced at about 150 catties per *mou* per year.

According to reports of 1932, the total tobacco production in the Province was 59,650 piculs, including 27,500 piculs from Fenghsien, 15,000 piculs from Peihsien, 9,000 piculs from Taihsing, and 5,000 piculs from Huaian. The wholesale price varies from $4.00 to $30.00 per picul with difference in grade and demand.

Tobacco leaf produced in the Province is marketed in Shanghai where is the center of cigarette industry. The supply is however, never sufficient to meet the actual demand and leaves have to be imported from other provinces. The finest tobacco leaf such as the Virginia is imported from the United States. Other materials in the cigarette industry such as paper, etc. are also imported from abroad.

Cigarette factories and tobacco companies usually purchase leaves in the area where tobacco is grown, through agents. Factories like the Nanyang Brothers Tobacco Com-

pany and the British-American Tobacco Co. have their own plantation. Tobacco planted by farmers are sold to tobacco agents, who extend credit and supply seeds, etc. to them, before planting. At present, except some farmers who have contracts with cigarette companies, most of the output are monopolised by tobacco agents.

YELLOW GRASS

Yellow grass is a special farm product of Kiangsu Province. It is grown in Wukiang, Kiating and Hsuchiahang (徐家行). It is about five or six feet in height with triangular stalk and sharp leaf. Many farmers are planting this grass as a secondary occupation. The crop is harvested in late summer or in autumn. The grass is yellow in color, and can be used in weaving many articles. The grass is sometimes interwoven with silk, the product of which is called "yellow cloth" or "grass cloth." The principal articles made with the grass are brief-case, money-pocket, book-pocket, sleeper-shoe, etc.

The annual output of yellow grass is quite considerable. Area devoted to the planting of yellow grass covers about 600 *mou*, and with an average of five piculs per *mou*, the output amounts to 3,000 piculs, valued at $30,000. Wukiang supplies all the yellow grass to Wusih where output of yellow grass articles is valued at $120,000 to $130,000 annually. The marketing center of yellow grass is Wusih, and price ranges from $10 to $12 per picul.

OTHER FARM PRODUCTS

Other farm products in Kiangsu Province include sesamum seed, sugar cane, taro, rapeseed, pepermint, etc. The annual output of sesamum of Tungshan is 449,400 piculs; Kiangtu, 95,000 piculs; Suchien, 84,000 piculs; and Hsiaohsien, 63,000 piculs. The southern section of the Province produced comparatively little in quantity. The production of Fenghsien, Kiangpu, and Luho together amounts to about 1,000 piculs a year.

Sweet potato is produced in large quantities throughout the Province. The crop has an average of 1,056 catties per *mou*. The total cultivated land for this product is estimated

at 3,471,000 *mou*, and so the annual production must have reached 36,628,870 catties.

Taro as part of the Chinese food-supply is produced everywhere in the Province. The rapeseed as a raw material for vegetable oil is produced largely in Wuhsien, Kunshan, Changshu and Pootung. A large amount of rapeseed is shipped to Shanghai and then exported to foreign countries. The peppermint as a raw material for making Chinese oil for medicinal use is produced in Kunshan and Taitsang, with an annual output of about $20,000.

The annual production of sesamum seed, sugar-cane, taro and rapeseed may be tabulated as follows:

Annual production of Sesamum Seed, Sugar-cane, Taro, and Rapeseed, 1932

(Piculs)

	Sesamum Seed	Sweet Potato	Taro	Rapeseed
Fenghsien	1,200	——	15,000	28,000
Chinshan	200	——	200	5,000
Liyang	130	250,470	160,000	480
Lishui	——	104,820	——	——
Shanghai	——	990,840	——	——
Tsungming	200	——	200,000	——
Kaoshun	250	——	8,000	1,000
Kiangning	800	409,550	600	800
Chuyung	60	728,510	18,000	670
Luho	1,200	——	89,200	300
Chinkiang	500	——	——	——
Paoying	1,200	——	——	10,000
Huaiyin	2,800	3,019,620	380,000	1,600
Suchien	84,000	1,060,650	346,500	22,000
Tungshan	449,400	1,143,270	963,000	——
Tangshan	24,000	714,020	326,000	40
Peihsien	——	507,800	450,000	——
Shuyang	——	3,654,790	300,000	——
Lienshui	2,900	4,484,520	2,000	1,400
Yencheng	3,500	——	2,500	——
Haimen	730	——	——	—

Kiangpu	2,000	62,920	30,000	1,000
Icheng	700	——	——	——
Kiangtu	95,000	468,350	105,000	——
Huaian	800	5,104,290	2,000	1,000
Ssuyang	10,000	3,298,290	200,000	500
Suining	40,000	2,137,640	100,000	——
Hsiaohsien	63,000	1,294,730	980,000	——
Fenghsien	1,500	477,450	534,900	40
Peihsien	200	162,820	50,000	10,000
Tunghai	170	8,601,600	50,000	——
Founing	20,000	1,551,920	1,000,000	100
Tungtai	10,000	——	13,000	12,000
Chitung	10,000	——	130,000	——
Sungkiang	——	——	——	200,000
Chuansha	——	——	——	10,000
Tsingpu	——	——	——	200,000
Wukiang	——	——	——	400,000
Wuhsien	——	——	46,000	——
Kunshan	——	——	——	119,800
Kiating	——	——	——	47,300
Taitsang	——	——	——	30,000
Changshu	——	——	——	20,000
Kiangyin	——	——	10,000	——
Chintan	——	——	300,000	——
Tanyang	——	——	500	——
Taihsing	——	——	76,000	——
Kangyu	——	——	340,000	1,000
Jukao	——	——	1,200	——
Tsingkiang	——	——	500,000	——
Nantung	——	——	241,000	——
TOTAL	879,990	36,628,870	8,073,100	1,351,948

CHAPTER XII

LAND RECLAMATION AND SALT PRODUCTION

THE TRACT of land of 800 *li* along the coast of the China sea, between the Huai and Yangtse Rivers, was formerly salt fields. During the time of the Ching Dynasty, no private interest was permitted to hold salt fields in this area, as the four provinces of Kiangsi, Hupeh, Hunan and Anhui depended upon it for their salt supply. Later, on account of the eastward extension of the coast line due to the rapid accumulation of sand, these fields were almost beyond the reach of the tide. The cost of salt production became higher and the output decreased. Compared with the salt fields north of the Huai river, the cost of production was fifteen times higher. Consequently, salt production almost entirely ceased in the district south of the Huai River causing a large number of people to be unemployed. These people began to turn into farmers and cultivated, though without official permission, the fields formerly used for the salt production. Since the founding of the Republic, as the restriction has been removed, this large tract of land has become mostly cultivated fields.

In 1901, Mr. Chang Chien founded a corporation for the purpose of lnad reclamation in this area. In 1914, the Government passed regulations concerning land reclamation and cotton cultivation in this region. Many land reclamation companies came into existence and most of the land about 200 miles in length, bounded by Lussuchang (呂四場) in the south and Chenchiakang (陳家港) in the north, has been reclaimed by these companies.

Although these companies aimed chiefly at land reclamation, they were also engaged in salt production, because no profit could be obtained from their agricultural activities at the beginning. Irrigation ditches had to be dug and dams to be built to prevent floods. In places where the soil was saturated with brine, grass must be grown for a few years before any thing can be cultivated. These companies, however, are generally limited in capital, and depend principally upon the deposits and rental of tenants to meet their constructional and ordinary expenses. During the years when crops are good, their income from this source is quite considerable and more than sufficient to pay the expenses. In recent years, however, on account of successive natural calamities and frequent bandit disturbances, these companies are in a precarious position.

The land operated upon by these companies lies in latitude 30° N. to 34° N. and longitude 119° E. to 121° 30′ E., about 70 miles from Shanghai. It is bounded by the Yellow Sea in the northeast, the Yangtse River in the South and the Grand Canal in the west. With the exception of a few small hills near Nantung, this tract of land is a huge plain. The climate is somewhat the same as that of Shanghai, but the temperature is a little lower in winter and the raining season is about a month later. As this is an alluvial plain formed by the sediments of the Yangtse, Huai and the Old Huang Ho Rivers, the soil is rich in organic matters. Agricultural crops, particularly cotton, flourish easily in this region.

The following table shows the details of salt production and land reclamation companies in this area.

Name of firm	Location	Capital	Area of Land	Area of Cultivated Land	Date of Establishment
Ken Mu (墾牧)	Nantung	600,000	120,000	80,000	1903
Ta Yu Chin (大有晉)	„	720,000	240,000	90,000	1914
Ta Yu (大豫)	Jukao	1,500,000	480,000	130,000	1916
Hua Feng (華豐)	„	400,000	20,000	——	——
Ta Lai (大賚)	Tungtai	700,000	200,000	100,000	1917
Pao Feng (寶豐)	„	100,000	20,000	——	——
I Chang (益昌)	„	——	20,000	——	——
Tai Yuan (泰源)	„	——	300,000	——	——
Tung Hsing (東興)	„	400,000	100,000	——	1919
Chung Fu (中孚)	„	800,000	520,000	——	——
Tung Chi (通濟)	„	230,000	88,000	——	1920
Sui Chi (遂濟)	„	140,000	380,000	——	1919
Tung Sui (通遂)	„	450,000	110,000	15,000	1918
Yu Hua (裕華)	„	1,250,000	222,000	39,000	1922
Ta Feng (大豐)	„	2,000,000	593,000	219,000	1918
Jui Feng (瑞豐)	„	200,000	10,000	——	——
Tung Feng (同豐)	„	100,000	2,000	——	——
Ta Ho (大和)	Yencheng	1,215,000	170,000	30,000	1919
Ta Yu (大裕)	„	800,000	200,000	20,000	1920
Tung Hsing (通興)	„	——	100,000	——	——

Ta Kang (大綱)	"	1,200,000	100,000	30,000	1919
Hua Cheng (華成)	Founing	1,250,000	700,000	80,000	1918
Fou Yu (阜餘)	"	700,000	40,000	34,000	1919
Fou Tung (阜通)	"	120,000	20,000	—	—
Ta Sheng (大生)	"	400,000	70,000	—	—
To Teh (合德)	"	500,000	60,000	20,000	—
Ou Keng Tang (鷗耕堂)	"	100,000	10,000	10,000	—
Ta Tsin (大新)	"	250,000	—	—	—
Chung Chih (衆志)	"	6,000	3,000	—	—
Kai I Tang (愷宜堂)	"	50,000	10,000	—	—
Tung Jen (同仁)	"	40,000	4,000	—	—
Ching Yu (慶餘)	"	30,000	3,000	—	—
Yung Yeh (永業)	"	—	8,000	—	—
Ssu Yu (四友)	"	—	4,000	—	—
Hsin Tung (新通)	"	500,000	150,000	—	—
Yu Che (餘澤)	"	—	2,000	—	—
Hsin Nan (新南)	"	700,000	50,000	5,000	1920
Hsi Shuan Tang (習善堂)	"	—	2,500	—	—
Fou Kang (阜慶)	"	—	—	—	—
Chang Ya Chi (張亞記)	"	—	5,000	—	—
Chao Yun Chi (趙雲記)	"	—	5,000	—	—
Tung I (通益)	"	300,000	—	—	—
Hsin Nung (新農)	"	750,000	80,000	—	1922

SALT PRODUCTION

The salt fields in this district are of two kinds, *shang ting* (商埕) and *chao ting* (灶埕). A *shang ting* consists of an area of salt fields and equipments for salt production, all owned by salt merchants, while in the case of a *chao ting*, only the equipments belong to the merchants, the land being owned by the workmen. These merchants, however, limit their activities in the production of salt, the transportatin and marketing of salt are controlled by another class of merchant, the *yun shang* (運商).

Since the Salt Administration of the Ministry of Finance issued an order to reduce the area of salt fields south of the Huai River, many land reclamation companies sprang into existence. The people who formerly depended upon salt production for their livelihood lost their occupation, and most of them, however, have become the tenants of these companies. At present, nearly 80 per cent. of former salt workmen have turned into farmers.

LAND RECLAMATION

There are more than 40 companies engaged in land reclamation operating on this tract of land, mostly organized by the people of Nantung, though some of them are founded by the merchants of Shanghai and Taihsien.

The land owned by these companies is mostly cultivated by tenants. It is divided into units of *tiao* (垧) of 25 *mou* each. In renting land from these companies, the lessee tenant has to pay a certain amount of money as deposit and a fee of 30 cents per *mou* for the process of drawing up the lease. The tenant builds his own farm houses and buys their own implements. After the spring crop, a tenant pays 10 cents or more per *mou* to the lessor company. The autumn crop is divided by the company and the tenant, in 40 and 60 per cent. of the harvest respectively.

The total number of tenants of these companies exceeds 50,000 families, composed of more than 200,000 persons. These tenants are of two groups: the farmers from Tsungming and Haimen and the former salt workmen. The natives of those two districts are mostly cotton planters.

On account of the dense population and limited area of land, a considerable number of them have migrated into this district.

The cultivated land in this area yields two crops annually, the spring and the autumn. The spring crop consists principally of wheat and beans, the autumn crop, cotton. The annual yield of cotton per *mou* in this area is much smaller than that in Nantung, Haimen, and Tsungming, a *mou* of the best land here yields only about 100 piculs of raw cotton a year.

LAND RECLAMATION COMPANIES

The following land reclamation companies are the most prominent ones, and fairly representative of the rest:—

Ta Yu Chin Company (大有晉公司).—The land owned by this Company is only about a hundred *li* from the city of Nantung, and is served by good communication facilities. The head office is situated in Sanyuchen (三餘鎮), a town newly built up by the Company. The Company started operation on a quite small scale, but progressed rapidly and once enjoyed a period of prosperity and expansion. In recent years, however, owing to severe droughts and floods, the Company is heavily in debt, most of its properties being mortgaged.

The Company owns more than 90,000 *mou* of cultivated land. The spring crop consists of wheat, the autumn crop, cotton. Most of its tenants, now numbering about 2,000 families, are natives of Haimen. A tenant has to pay $8 per *mou* as a deposit and 30 cents per *mou* for the expense of drawing up the contract. The spring rent is 15 cents per *mou*, the autumn crop, 40 per cent. of the cotton crop. In addition to the land cultivated by tenants, the Company manages a few farms, of about 1,000 *mou*, on its own account.

At present, the land is under the control of the creditors of the Company.

Ta Yu Company (大豫公司).—This Company is situated in the district of Jukao, about 140 *li* from the City and 120 *li* by water and 90 *li* by land from the city of Nantung, possessing good communication facilities.

The Company has more than 100,000 *mou* of cultivated land and about 5,000 families of tenants, of whom nearly two-thirds are natives of Haimen. The deposit which a tenant is required to pay is $8 per *tiao*, while the expense of drawing up the contract is 25 cents per *mou*. The Company gets 40 per cent. of the principal autmun crop. For the spring crop, a tenant has to pay about $3 for every *tiao* of land. In addition, 6 piculs of straw must be given to the Company annually.

Since 1930, the land owned by this Company has been managed by a committee composed of the representatives of the Company and those of its creditors. Though the Company is still not in a position to pay off its debts, the net income from the land after meeting all expenses amounted to seven or eight thousand dollars annually in recent years.

Tai Lai Company (大賚公司).—This Company is situated in the district of Tungtai, about 80 *li* from the city.

This Company has reclaimed in all about 70,000 *mou* of land. It has, however, sold nearly half of the cultivated land to farmers, retaining at present about 30,000 *mou*. It has about 1,700 families of tenants. A tenant is required to pay $3 for each *mou* of land, while the crops are shared equally by the Company and the tenants. In years when the crops are poor, the Company takes only 30 per cent. No deposit is required of former salt workmen.

Up to the end of 1931, this Company was more than $370,000 in debt.

Ta Feng Company (大豐公司).—This Company is also situated in the district of Tungtai. It possesses about 1,200,000 *mou* of land, of which more than 150,000 *mou* are cultivated. There are approximately 4,000 families of tenants. A tenant has to pay $7.5 for every *tiao* of land when the contract is drawn, and for the following three years, he pays annually as deposit for every *mou* of land. A former salt workman is exempted from the expense of drawing up the contract and the rent of the first two years. In addition to the land cultivated by tenants, the Company manages a few small farms on its own account.

At the beginning of its history, this Company produced large quantities of salt, but later, production decreased as most of the land were reclaimed. In rceent years, the Company has incurred a considerable amount of debt, and beginning from 1931, the Company's land has been in the hands of the creditors.

Hua Cheng Company (華成公司).—This Company is situated in the district of Founing, with its head office at Paochiatun (鮑家屯), 183 *li* from the city of Yencheng. At the beginning the Company planned to reclaim 130,000 *mou* of land. But as the soil was still saturated with brine, the results were unsatisfactory. The Company has now only about 17,000 *mou* of cultivated land and about three hundred families of tenants. No deposit is required of tenants, who share equally with the Company in the spring crop of wheat and other cereals and get 60 per cent. of the autumn crop of rice or cotton.

CHAPTER XIII

FORESTATION

ALTHOUGH there is no great forest in this Province, wooded tracts of land are frequently seen in the districts around Kiangning, Wuhsien, Wuchin and Tungshan. The following list contains a number of the trees most commonly found in this Province:

Scientific Name	Places where it is found
Ginkgo biloba, L.	Whole Province
Pinus massoniana, Lamb. ..	„ „
Cunninghamia lanceolata, Hooker	Wuhsien, Ihsing, Kiangning Shanghai
Thuja orientalis, L.	Whole Province
Thuniperds chinensis, L. ..	Wuhsien, Wusih, Kiangning, Shanghai
Populus odenapoda, Maxim. .	Kiangning, Chinkiang
Salix babylonica, L.	Wuhsien, Shanghai, Kiangning
Junglans regia, L.	Kiangning
Pterocarva Stenoptera, De. .	Kiangning, Chinkiang
Platycarya strobilacea Sieb. et Zucc.	Wuhsien, Wusih, Kiangning Kiangpu
Castanea mollissima, Blume	Kiangning, Ihsing, Wusih, Liyang
Quercus serrata, Thunb.	Kiangning Ihsing, Liyang, Kiangpu
Quercus fabri, Hance	Wuhsien, Kiangning
Quercus glauca, Thunb. ...	Kiangning, Ihsing
Quercus glandulifera, Bl. ..	Chinkiang, Kiangning
Alnus japonica, Sieb. et Zucc.	Ihsing
Celtis sinensis, Pers.	Ihsing, Wuhsien, Shanghai, Wusih, Kiangning
Ulmus macrocarpa, Hamuce	Kiangning
Ulmus parvifolia, Jacp.	Ihsing Wuhsien, Chinkiang, Kiangning, Shanghai
Zelkawa serrata, Makino ...	Kiangning

Brousonnetia L.	Kiangning, Chinkiang
Lindera glauca, Bl.	Kiangning, Wuhsien, Shanghai
Liguidamban formosana, Hance	Kiangning, Wuhsien, Shanghai
Albizzia julibrissin, Denth ..	Shanghai, Wusih, Kiangning
Sophora japonica, Linn	Kiangning, Chinkiang, Ihsing, Wuhsien
Dalbergia hupeana, Hance ..	Tungshan,Kiangning,Chinkiang
Ailanthus altissima, Swingle	Kiangning, Chinkiang
Cedrela chinensis, Juss	Kiangning, Liyang
Phellodendron, Amurense ..	Kiangning, Chinkiiang, Ihsing
Sapium sebiferum, Roxd	Ihsing, Kiangning, Wusih, Shanghai, Chinkiang, Wuhsien
Acer trifidum, Hook, et Aru .	Kiangning
Thea sinensis, L.	Wuhsien, Ihsing, Kiangning
Failurus ramosissimus, Poip	Chuyung
Koelreuteria Paniculata, Laxm	Wuhsien, Ihsing, Kiangning
Sapindus mukurossi, Gaertn	Kiangning
Firmiana simplex W. F. Wight	Wuhsien, Shanghai, Kiangning
Symplocos craegoides, Ham .	Kiangning, Shanghai, Wuhsien, Kiangyin
Catalpa Bungei, C. A. Mey ..	Kiangning
Catalpa Orata, Don	„
Paulownia tomentosa, Koch	„

FOREST SECTIONS

The Soochow-Changchow and Suchow-Haichow circuits are the most hilly regions of the Province, consequently, little wood land is found besides these places. For convenience sake, the Soochow-Changchow circuit is called the first forest section, the Suchow-Haichow circuit, the second forest section.

THE FIRST FOREST SECTION

This section includes a considerable area, bounded by Wuhsien in the east, Anhui on the west, the Yangtse River on the north and Chekiang on the south. It is divided into five sub-divisions, 1. Chunghoh (鍾霍), 2. Neuchiu (牛邱) 3. Maoshan (茅山), 4. Tungkuan (銅官) and 5. Taihu (太湖).

The Chunghoh Section.—This section consists of the district of Kiangpu, the Northern parts of Kiangning and Chuyung, and the western part of Tantu. In this section, a considerable area of land has been aforestated by

individuals, corporations, and the Provincial Government. The following are some of the more prominent organizations engaged in the work of aforestation:—

Chung Shan Ling Yuan (中山陵園).—This park includes the entire Chungshan district formerly belonging to the First Kiangsu Forest Station. The trees in the park are of many varieties, pine being the most numerous. At present, the National Government is planning to built up a forest here in memory of Dr. Sun Yat-sen.

The Central University Forest Station.—The First Station is situated at Laoshan (老山), north of the Yangtse River, while the Second Station is situated at Tangsui (湯水) and Shiashu (下蜀). Since the establishment of these stations, 76,247 *mou* of land have been aforestated in the First Station and 114,417 *mou* in the second, the total number of trees planted amounting to more than seven millions.

Chinling Forest Station and Nursery.—This station has a total area of over 100,000 *mou*, distributed at Mufushan (幕府山), Wulungshan (烏龍山), Tsinglungshan (青龍山) and Lunshan (嵛山), and a nursery at Ssufanchen (四方城), near the Chungshan Gate of Nanking. In addition to 3,600,000 trees planted, about seven million trees are placed under protection in the area of Chungshan.

Tientsin-Pukow Railway Forest Station.—This station is situated at Puchen (浦鎮), on the west side of the railway. It has an area of about 6,000 *mou* and a nursery of about 200 mou. Trees planted consist principally of pines, *dalbergia*, *arbor-vitae*, *pistach* and *symplocos*.

The Central Model Forest Station.—This station is situated at Niushoushan (牛首山) and Chiuhuashan (九華山), having a nursery at Tangsui.

The Bureau of Forestry of the Kiangsu Provincial Government.—This is the organization for the control and protection of forests in this Province. Limited by its financial capacity, however, it has not accomplished much.

Natural forests.—Many natural forests, though not extensive in size, are found near the village-towns of Kaoshun, Tangsui, and in the districts between Hsiakuan and Chinkiang.

The Niuchiu Section.—This section includes the whole district of Kaoshun, southern part of Kiangning and the south-western part of Lishui. Although there is a considerable area of hilly regions in this section, with the exception of a few small pine forests owned by temples, little wood land is found.

About 60 per cent of the hills between the South Gate of Nanking and Tungshanchiao (東善橋) are covered by horsetail pines, mixed with a number of chestnut trees, bamboos and a few other kinds of trees.

From Tungshanchiao to Taowu (陶吳), the hills are mostly barren, only a few places west of Hsiyangchen (西陽鎮) are planted with horsetail pines.

The region between Taowu and Hengchichiao (橫溪橋), was covered by a dense forest 10 years ago. At present only one-tenth of it still remains.

Between Hengchichiao and Hsiehtsun (謝村), few trees are found except in the section between Hengchichiao to Hsientsun (單村), where about 40 per cent of the hilly regions have been planted with horsetail pines.

In the section between Hsiehtsun and the city of Lishui, about 80 per cent of the land not under cultivation is barren. In the portion within the district of Lishui, however, horsetail pines, either of natural growth or planted, are found on 40 per cent of hillsides.

In the southern part of Lishui and the eastern part of Kaoshun, only a few small forests, owned by temples, are found.

Maoshan Section.—This section consists of the southern parts of Chuyung and Tangtu, the west part of Chintan, the eastern part of Lishui and the north-eastern part of Liyang. This is the section in which the work of aforestation is more advanced than in others. There are more than 10 corporations and private enterprises engaged in aforestation.

At a place called Chungshanan (中山庵), between Lishui and Tunglushan (東瀘山), a forest consisting of maiden-hair trees, hackberries, tallow trees, lacebark elm, *dalbergia*, devils clubs and chestnut trees is found. In regions nearby, the newly planted mulberry trees and horsetail pines are also in fine condition.

From Lishui to Tienwangssu (天王寺), all the hills in this section, which occupy about 60 per cent of the land, are covered by newly planted horsetail pines.

Horsetail pines are planted on all hills in the area between Tienwangssu and Tamaoshan (大茅山), but Tamaoshan, the biggest of them in size, is almost entirely barren.

At Fushan (浮山), the Foulu Aforestation Company (浮瀘樹林公司), which owns 6,000 *mou* of wooded land, is situated.

At Tienwangssu and vicinities, horsetail pines are planted in about 70 per cent of this area.

From Tienwangssu to Fangshan (方山) and Mopanshan (磨盤山), horsetail pines are found on the surrounding hills. Many varieties of trees are found on the upper part of Fangshan in addition to tea and mulberry trees, while the lower part is covered by chestnut trees and horsetail pines. Fine oaks are grown at Suchiawa (蘇家凹) and there is a great bamboo forest at Mopanshan.

Tungkuan Section.—The Tungkuan section consists of the southern part of Liyang, and the south-eastern part of Ihsing. As there are many hills of considerable size in this area, a number of forests, particularly those of bamboo, are in existence.

The hills between Ihsing and Tingshan (鼎山) are mostly barren, but several small-sized pine forests are found between Tingshan and Shushan (蜀山)

Many bamboo forests were found in the district between Hucha (湖汊) and Tungling (東陵). In recent years a considerable portion of them has been destroyed by the inhabitants owing to the high price of bamboo.

In Lungchissu (龍池寺) and its surrounding country, many bamboo and mokey pine forests are found.

From Huangchien (黃澗) to Changchi (張渚), many bamboo forests are found. The Lungtan Aforestation Association (龍潭培植森林園) and the forest owned by the district public schools of Liyang are situated in this area.

Taihu Section.—This section consists of Wuhsien, Wuchin and Wusih. Horsetail pine is the principal variety of tree found in this section, though elm, golderain tree, maiden-hair tree, and zelkova are also quite frequently seen.

In addition to many fruit trees such as chestnut, loquat, persimmon, orange, Chinese strawberry, a considerable number of pines, zelkova, golderain trees, camphor trees are found in Tungshan (東山).

Hsishan (西山) woodland occupy about 40 per cent of the area in this section. The forests on the upper part of the hills consist purely of horsetail pine, those on the lower part, a mixture of pine, oak and zelvoka.

Horsetail pines are found in great numbers on Chunglungshan (穹窿山) and other hills near the Taihu lake.

On the foot of Tienchishan (天池山) and other hills, forests consisting of horsetail pines and oaks are found. Firs and alders grow abundantly on Tsuipingshan (翠屏山) and Nanyangshan (南陽山).

A forest, about 200 *mou* in area, consisting of pines and Chinese cedars, is found on the northern side of Huishan (惠山).

There is a forest of pine, zelkova, bamboo, tallow tree, and pagoda tree is found on Machishan (馬蹟山), occupying about fifteen per cent of the area of the hills.

THE SECOND FOREST SECTION

This section includes the districts of Tungshan, Hsiaohsien, Suining and Peihsien on the west of the Grand Canal, and Tunghai, Kuanyun, Chuyang, Suchien and Kangyu on the east. More than half of the hilly regions in this

section are Government property and entirely barren, and very little plant growth is found on private owned hills. Eleven years ago the Kiangsu Provincial Department of Industries planned to aforestate these regions in this section, the scheme, however, was abandoned on account of local opposition. The work is now taken up by a number of corporations and individuals, who planted a considerable number of forest trees and fruit trees. But, owing to their recent beginning, the results obtained are still insignificant. As to natural forests, there are only three worth mentioning in this section, one at Hangchuangyu (皇巢峪) Hsiaohsien, another at Yungtaishan (雲台山), Kuanyun, and the third at Wuhuating (五華頂), at Suchien.

NURSERIES

There are altogether 20 nurseries in this Province, 9 of them being under the control of the Provincial Bureau of Forestry, the remaining 11, being established by the respective district governments. The provincial nurseries are situated at Mufushan, Tsinglungshan, Wulungshan, Liyang, Tungshan, Chingkiang, Ihsing, Chiatseh (渣澤) and Holingssu (鶴林寺), while district nurseries, at Chinkiang, Kiangning, Lishui, Kaoshun, Kiangpu, Luho, Liyang, Ihsing, Hsiaohsien, Kuanyun and Kangyu. The district and provincial nurseries are doing the work of aforestation. In 1930, the provincial nurseries aforestated a total area of 1,742,024 *mou* and planted 1,120,614 trees, while the district nurseries, according to an investigation made by the Provincial Department of Industries in 1932, aforestated a total area of 6,103.78 *mou*.

The provincial nurseries prepared 11,129,158 seedlings in 1931. Of this number, 6,797,255 are obtained by direct sowing, 25,192 from cuttings, 960,430 from transplanting, the rest being the seedlings left in the beds.

The district nurseries prepared in 1921, 8,461,815 seedlings, consisting mainly of horsetail pine, black pine, arborvitae, maple and alder.

BOOK SIX

FISHERY AND STOCK RAISING

CHAPTER I

FISHERY

COASTAL

CIRCLED with a sea-coast of 1,669 *li* at the south-eastern part, the Province of Kiangsu has long developed its fishing industry, though the methods followed remain in the primitive. Off the south-eastern coast lies a group of islands, the more important being Chengshan (嵊山) Huaniaoshan (花鳥山), Luhuashan (綠華山), Ssuchiao-shan (泗礁山), Machihshan (馬蹟山), Huanglungshan (黃龍山) and Hsiaoyungshan (小用山). The following is a brief description of these islands.

Chengshan.—This island, 78 nautical miles south-east of the mouth of the Yangtse River, is separated into two elevations, both of which are crossed with mountains. Being safe from winds, the fishing boats are gathered there in considerable numbers. Around the island live a variety of fishes, such as *wongyu* (黃魚) fish, *Niphon spinosus*, hair-tails, flounders, sharks, mussels, etc.

Huaniaoshan is located at 68 miles southeast of the mouth of the Yangtse, and cuttle-fish, sea-weeds, mussels, hair tails, *Niphon spinosus* and crabs are found plentiful around the Island.

Luhuashan.—This is land lies beside the Huaniaoshan and provides a suitable place for anchoring fishing boats. The varieties of products are practically same as those around Huaniaoshan.

Ssuchiaoshan.—Sixty miles east of Woosung lies this island, around which the water is deep enough for mooring boats. Among the products there jelly-fish takes the lead with shrimp second.

Machihshan.—This island, 62 miles southeast of the mouth of the Yangtse, together with the Ssuchiaoshan, forms an ideal anchorage for fishing boats. The most prominent of the products is *wongyu* fish.

Huanglunshan.—This is situated 13 miles southwest of Chengshan and abounds in *wongyu* fish, jelly-fish, cuttle-fish and shrimps in the waters around.

Hsiaoyungshan.—Sixty miles south of the Woosung port lies this island, where fishing boats can lay anchor along the south-western and north-eastern shores. *Wongyu* fish is found in large quantities with jelly-fish, sea-blubber and shrimps next.

Fishing industry is conducted in two ways, one using machinery set in steamers, to cast and haul nets and the other using human strength to throw and drag nets, though steamboats are also used.

Steam fishing boats were first used at the beginning of the century, when Mr. Chang Chien (張謇), a prominent industrial leader, started fishing business with a fishing steamer purchased from Germany. During the European War he expanded his business by building another steamer. In 1922 the Haichow Steamer Experimental Station of the Ministry of Agriculture and Commerce (農商部江蘇海州輪業試驗場) built a fishing steamer, and later a British vessel was purchased by the Hai Li Fishing Co. (海利漁業公司), and a fifth steamboat, Lien Feng (聯豐), entered the field in 1928. But owing to financial difficulties, all these steamers except Lien Feng have been suspended.

A large sum of money was also invested in that part of fishing industry, in which the throwing and dragging of nets are done by human labor. But owing to lack of good pilots and experienced captains, coupled with the absence of encouragement by the Government, those so engaged very often sustain losses and therefore many have given up this business, the only one operating today being the Chih Ta Fishing Company of Shanghai (上海志達漁輪局).

In the old-styled fishery wooden sail-boats are used, and the catch is much smaller than that in the modern fishery. Those engaged in catching *wongyu* fish are generally concentrated around Chengshan and Huaniaoshan

Islands and Lussuyang (呂泗洋). During the period between Li Chun (立春, early in February) and Li Hsia (立夏, about early May) all fishermen set out in their sail-boats, usually 42 feet in length and 8.4 feet in width, equipped with hemp nets. The fish caught are sold to the customers from other localities through agents on a commission basis of three cents per picul.

The hair-tail fishery is centered in the neighborhood of Chengshan and Kouchi (枸杞) Islands, where 90 per cent of the inhabitants are engaged in this business. During the fishing season from about November 20 to January 20, more than 4,000 boats of various sizes are set out to sea. Each catch is different in value according to the various size of the boats, the largest boat being able to make a catch of $2,400, which the others netting from $300 to $2,000. Recently the catch shows a decline, the total amount in 1931 being valued at $2,000,000.

The period from Hsia Chih (夏至, later part of June) to Chu Shu (處暑, toward end of August) is the season for catching cuttle-fish. Throughout the season a fisherman can get a sum of from $10 to $30, and the total catch is estimated at $500,000. The cuttle fish caught are either salted or dried, and sold at $18-$40 per picul.

Jelly-fish grow abundantly around Ssuchiao and Huanglung Islands. In autumn the inhabitants are busily engaged in catching them. Their boats are usually flat at bottom and 84 feet long and 10 feet wide, and each is capable of loading one thousand piculs of jelly-fish.

The waters around the Chusan Islands and Lussuyang abound in *luhyu* fish (鱸魚). From May to August over 1,000 boats appear here and there on the waters busily engaged in the catching. The frequent changes of weather and the presence of pirates have caused a setback to this business. The catch of each boat in 1930 was valued at $600 only, being short of 1,000 dollars of the capital invested. The fish, after being salted, is sold to Chapu (乍浦) at from $12 to $16 per picul, while the shipments to Shanghai and Ningpo sell at $10 per picul.

Machiaoyu (馬鮫魚 , *Scomberomorus sinensis*, Lacep.) fishery is centered in Lussuyang, and annual catch starts from June 12 and continues for about two months. The fish after being caught is usually salted and then shipped to Hupu (滸 浦), Sungkiang, Kiangyin and Woosung for sale.

FRESH WATER FISHERY

As Kiangsu is watered by the lower reaches of the Yangtse River and by a few large lakes, its fresh water fishery is prosperous too. In the lower Yangtse there are several kinds of fishes, such as *shihyu* fish (鰣魚) or samlai (*Ilisha elongata*), mullet, *huiyu* fish (鯇 魚) *taoyu* fish (刀 魚) and crabs, while in the lakes, crabs, "green" fish (青魚), *chiyu* fish (鱭魚 , *Collia nasus*, T. and S.), *yingyu* fish (銀魚, *Salanx microdon*, Bleeker) and *lienyu* fish (鰱魚) are abundant.

Shihyu is very abundant in that section of the Yangtse from Liuho (瀏河) to Chinkiang. The fishing season commences from April and closes in June, and in one season each boat can catch 40 or 50 catties. The best market for *shihyu* is Shanghai, selling at about $1.50 per catty.

Mullet grows in the Yangtse between Liuho and Kiangyin. The first three months of the lunar year are the catching season, during which one boat can make at least a catch of 30 catties, the biggest catch being eight piculs. This kind of fish is mostly consumed in the cities along the Yangtse, sold at 50 cents per catty.

Chiyu center in the waters from Kiangyin to the mouth of the Yangtse. Catch is made between April and July, and it is sold in Shanghai after the fish is dried. Those grown in the lakes are smaller and consumed locally.

From Chinkiang to the mouth of the River *huiyu* fish grow in abundance, with spring and autumn as the two fishing seasons. A catch of from 20 to 150 catties can be made for a boat in one season. The price ranges from 20 to 40 cents per catty.

Crabs are to be found nearly everywhere in the Province, the products of the Yangchenhu Lake (陽澄湖) being recognized as of the best taste, and most popular in Shanghai and in places along the Nanking-Shanghai Railway. In the best season (from later autumn to middle winter) the Yangchenhu Lake can yield about 400,000 catties, while from the Yangtse River only 100 to 400 catties are to be taken by each fishing family. Market is found in every city, with Shanghai as the largest.

"Green" fish and *lienyu* fish are reared in the fishponds in various districts, the largest production being credited to Wusih, Kunshan, Wuhsien and Hsinghua. In addition to a small portion which is consumed locally, large quantities are shipped to Shanghai, the total amount sold there in 1929 being 14,749 piculs of "green" fish valued at $376,000 and 10,000 piculs of *lienyu* fish valued at $113,000.

The coastal districts of Kiangsu all abound in fishes, among which the most prominent are Tsungming, Fenghsien, Nanhui, Chuansha and Kangyu.

Tsungming is an alluvial plain situated just at the mouth of the Yangtse River, and therefore forms the center of sea products. Every year the total yield amounts to four or five thousand piculs, of which more than half are lobsters and shrimps.

Fenghsien, Nanhui and Chuansha, lying at the coast of the East Sea, yield marine products nearly equal to Tsungming. Both Fenghsien and Chuansha are famous for the small *wongyu* fish, the former yielding 700 piculs and the latter 50,000 piculs annually. Common perch in Fenghsien amounts to 450 piculs per annum and cuttle-fish in Chuansha to 5,000 catties. Nanhui's production of fishes amounts approximately 60,000 catties a year, shrimps 12,000 catties, and crabs 8,000 catties. While Kangyu yields a total amount of 70,000 piculs yearly, of which *lehyu* fish and small *wongyu* fish amounts to 50,000 piculs and *Niphon spinosus* 20,000 piculs.

In other interior districts production is also plentiful. The small *wongyu* fish and *shihyu* of Kiangyin amount respectively to 50,000 and 2,000 piculs annually; shrimps

and crabs of Chinkiang and Tanyang to 5,000 and 1,000 piculs each; the *lientsuyu* fish (連子魚) of Chuyung to 158,000 piculs; and the total yield of Kiangpu, Icheng, Luho, Liyang, Lishui and Chintan to 7,000, 450, 500, 159,000, 13,500 and 7,000 piculs respectively. Regarding the districts around the Taihu Lake like Wusih, Wuhsien, Wuchin, and Wukiang, each raises a considerable quantity per annum.

TRADE OF AQUATIC PRODUCTS

Shanghai, situated at the mouth of the Yangtse River and provided with easy communications to other localities, has formed the trade center of aquatic products, the amount of business done exceeding $2,000,000 annually. Details for the six months of 1931 are given in the following two tables:

FISHING BOATS ARRIVED IN PORT

	No. of Boats	Loads (piculs)	Value
July	102	24,680	$350,817
August	62	18,820	343,677
September	40	4,912	130,530
October	49	7,970	186,460
November	37	4,090	79,545
December	175	15,930	234,833
Total	465	76,402	$1,325,862

FISH BARRELS IMPORTED

	No. of Barrels	Piculs	Where from	Value
July	1,050	4,208	Ningpo & Chusan Islands	$ 60,562
August	1,108	4,422	"	88,288
September	1,296	5,166	"	113,402
October	1,562	5,708	"	149,280
November	2,321	7,889	Ningpo, Chusan I., Tinghai, Dairen & Chefoo	157,119
December	1,704	6,425	Ningpo, Chusan I. & Tsingtao	135,459
Total	9,041	33,828		$704,110

The above figures include a part of aquatic products imported from other provinces, while products sent to Shanghai from the interior of Kiangsu reach enormous quantity, but statistics are not available except the 1929 report furnished by the Fish Trade Union of Shanghai, set out as follows:

Fish *Hong*	Products from:	Total Value of Business
Chu Chang Shun (朱長順)	Northern districts & Yangtse River	$697,229
Tung Jen Chang (同仁昌)	North districts	546,854
Yu Jun (裕潤)	"	227,303
Heng Tai (衡泰)	Yangtse River	186,352
Yung Tai (永泰)	"	200,656
Pao Chi (寶記)	Yangtse River & Northern districts..	271,069
Total		$2,129,463

CHAPTER II

FISH CULTURE

IN KIANGSU a prosperous business has been done for many years in raising fresh water fish, but owing to the unscientific methods followed, very little improvement was made in this industry. The following gives a brief description of the fish rearing industry in the Province:

FRY RAISING

Chinkiang is the most important district in Kiangsu in fry raising. In such places as Shihchakow (石閘口), Shatsukang (沙諸港), Lien-pi-ta-kang (棟壁大港), etc., fry are raised in enormous quantities, and the annual production has been increasing considerably during the last few years.

Among the varieties handled *tsingyu* fish (青魚) ranks first in quantity, with *chaoyu* (草魚) or "grass" fish and *pienyu* fish (鯿魚) second, *lienyu* fish (鰱魚) third, and carp fourth. The season for catching fry usually lasts about two months, commencing from the "Beginning of Summer" (May 6) and closing at "Little Heat" (July 7). Fry are caught in a specially prepared net made of hemp cloth, and are either reared in fish-ponds or sold directly to the *yu hong* (魚行).

Those engaged in the fry industry at Chinkiang are divided into two groups; one engaged in catching and the other in hatching. Most of these people are concentrated in three districts, the Yungku Hsiang (永固鄉), Kaotze Hsiang (高資鄉) and Lienpi Hsiang (棟壁鄉). The catchers in Yungku Hsiang are 13 in number, and their total catch in a year valued at $13,000, while the cultivators, numbering eight, rear fish worth $3,200 annually. In Kaotze Hsiang the catchers number six, with $3,000 representing their annual catch, while there are 21 families engaged in rearing fish, whereas the Lienpi Hsiang has

three catchers only, whose annual catch is valued at $1,500. The total area of the *yu tang* (魚塘) or fish-ponds in these districts is over 1,000 *mou*.

FISH CULTIVATION IN VARIOUS DISTRICTS

Wusih.—On both banks of the Lianghung Creek (梁鴻溪) fish-ponds are found in many places. Most of the inhabitants depend on fish-rearing for their living, the number of families so engaged being 700, all of whom follow traditionary methods.

Among the fish raised are *tsingyu* fish, "grass" fish, *lienyu* fish, *pienyu* fish and carp. The fry is obtained from various sources, either from the nearby village of Huyungyu (芙蓉圩), or from the distant city of Kiukiang (九江), Kiangsi Province, and Linhu (菱湖), Chekiang Province. When the fish grow to eight or ten ounces in weight they are removed to larger ponds, and after about a year, they are ready for the market.

Wuhsien.—Wuhsien is another city in Kiangsu where fish culture has been largely developed. The families engaged in the industry are mostly in the villages of Tung-ting-tung-shan (洞庭東山), Hengking (橫涇), Siangcheng (湘城) and Hwangtai (黃墟), the number of persons so employed being about 330, with an area of fish-ponds covering more than 2,000 *mou*.

Fry are obtained from Linhu Lake, Chekiang, and sold through the *yu hong*, which act as commission agents. Usually a pond ten *mou* in area contains 3,000 "grass" fish, 600 *lienyu* fish, 200 "white" fish, 100 carp, 100 *pienyu* fish, and about 30 *tsingyu* fish.

Changshu.—In Changshu the fish industry is widely pursued in Hoshih Hsiang (河市鄉), Tzetang Hsiang (支塘鄉), Siachiachiao (謝家橋) and Hengking Hsiang (橫涇鄉). The chief varieties raised are "grass" fish, *lienyu* fish, carp, and *pienyu* fish, the fry are mostly obtained from Linhu Lake and Wuchin.

Tanyang.—Although in Tanyang there is a large expanse of low, swampy land—in addition to Lienhu Lake (棟湖)—which is very suitable for fish cultivation, little progress has been made in this industry. Old and

unscientific methods are largely responsible for the delayed development. After the fry are placed in the fish-ponds they are never fed or attended to all the year round. According to those engaged in the industry, a profit of not more than $20 can be made from a pond one *mou* in area.

"Grass" fish take the lead in production, with *lienyu* fish second, and *tsingyu* fish third. Fry are bought from Kiukiang and other places.

Kunshan.—Fish cultivation in Kunshan is pursued both by individuals and companies. Of the total area of 1,500 *mou* of ponds about one-third is under the management of companies, among which two leading firms, the Teh Hsing (德新) and Ta Shen (大盛), control 160 and 122 *mou* of fish-ponds respectively. The method of rearing is very primitive and the only place where modern devices are used is the experimental station of the Provincial Fishery School at Chowshihchen (周墅鎮), where six modern fish-ponds are constructed. The results have been proved very satisfactory, but lack of funds checks further development.

Kiating.—Fish-raising at Kiating is carried on in reservoir made by setting bamboo pickets along the banks of creeks or streams. As in Tanyang, the fry are left to grow up entirely unassisted, no feeding or other attention whatsoever being given the whole year round.

Under the auspices of the Educational Bureau for Farmers (農民教育館), three new organizations for raising fish have been established recently. They are all conducted by farmers with their own capital, and what results will be achieved remain to be seen.

Taitsang.—At Huchuanchiao (滬川橋), a western suburb of the city, there is a Hsichou Reclamation Station (西疇墾殖場) owned and managed by Mr. Shu Hsi-chou (許西疇). The Station also engaged in fish-raising, the total area of fish-ponds being 26 *mou*.

Nantung.—The fish industry in Nantung is quite prosperous. The College of Agriculture (農學院) has a fish-pond covering 180 *mou*, the annual production being

valued at over $1,000. Another pond is located at Chung-kung-yuan Park (中公園) with an area of 200 *mou* and a third at Shao Tze Shih (孝子祠) is 300 *mou* in area. The Pa Chang Fish Company (八廠養魚公司) has a pond of 800 *mou*, with another firm at Erhkowtow (二溝頭) owing a pond of 300 *mou*. All these concerns are doing a successful business.

CHAPTER III

PRESERVATION OF AQUATIC PRODUCTS

PRESERVATION of aquatic products is widely pursued in this Province, the district of Kangyu and the islands of Chengshan and Machihshan (馬跡山) being the most famous places for this industry. Among the preserved articles the *wongyu* fish, cuttle-fish, hair-tails, shrimps, shrimp eggs, sea-weeds, mussels, jelly-fish are the most important.

Preservation of *wongyu* fish is done in the island of Machihshan during May and June. The inner parts of the fish are first removed before thoroughly rubbed with salt. After being kept for a certain time they are taken out and dried in the sun. The dried fish are then shipped to Shanghai and other places for sale at a price ranging from $20 to $45 per picul. The annual production of the island is valued at over $1,000,000.

A large number of fishermen earn their living by preserving cuttle-fish. In 1932 there were 1,832 families engaged in this industry with a total production of 14,600,000 catties. In preserving cuttle-fish no salt is used. The fish only dried in the sun before ready for the market.

Hair-tails are preserved with salt at Chengshan, Ssuchiaoshan and other islands, where more than 90 per cent of the inhabitants are engaged in this industry. Most of the goods are sold in Shanghai at about 20 cents per catty.

Dried shrimps and shrimp-eggs are generally made in the northern districts of the Province with Nantung as the most important city. The price is 50 cents for one catty of dried shrimps and two dollars for one catty of shrimp-eggs.

Mussels are found most abundantly in the outlying islands. They are first cooked in boiling water, before with

their shells removed. They are then dried in the sun and sent to the markets for sale. The total production of Chengshan and Kouchi (枸杞) islands in 1932 amounted to more than 2,000 piculs, valued at about $70,000.

The vicinity of Chengshan produces sea-weeds in great abundance. When they are taken ashore, they are washed in clean water and then dried in the sun. They are mostly sent to Chekiang, selling at one dollar per catty.

Many people in Nanhui, Sungkiang, and Lishui are engaged in preserving sea blubbers. The process is somewhat complicated. The jelly-fish caught are placed in a sort of bags and washed in fresh water. When the impurities are removed they are cut into two parts and soaked in a mixed solution of salt and alum. After a few days they are taken out with the black covering removed before being soaked for the second time. Some days after they are ready for the market.

CHAPTER IV

STOCK RAISING AND ANIMAL PRODUCTS.

CATTLE AND BUFFALO

COWS and buffaloes are very common domestic animals in this Province, as they are widely used by farmers in doing various kinds of work on farms. In recent years a considerable number of foreign cows have been imported for dairy purpose.

Peihsien, Fenghsien, Hsiaohsien, Tangshan and Wukiang are noted for the buffaloes they produce, Kiangtu, Kuangyun, Suchien, Shuyang, Kiangpu, Founing, Yencheng and Tungtai, for their cows. Imported cows are mostly found in Chuansha, Shanghai, Nanking and Nantung. The following table shows the approximate number of cows and buffaloes raised annually in various districts of this Province:

	Number	Total Value	Price Per head
Chintan	4,000	$ 240,000	$60
Wukiang	26,038	2,083,040	80
Wuchin	2,000	160,000	80
Lishui	678	53,240	80
Chitung	600	36,000	60
Kuanyun	20,000	2,400,000	120
Wusih	3,000	210,000	70
Kaoyu	8,000	560,000	70
Kiating	3,188	223,160	70
Chinkiang	1,200	84,000	70
Yencheng	10,0000	600,000	60
Fenghsien	1,800	126,000	70
Tungtai	26,000	1,830,000	70
Peihsien	46,358	1,622,530	35

Fenghsien	34,317	1,201,095	35
Tunghai	2,200	88,000	40
Ssuyang	1,500	75,000	50
Kiangyin	5,000	300,000	60
Paoying	8,000	640,000	80
Icheng	4,000	200,000	50
Suchien	50,000	2,500,000	50
Shuyang	40,000	1,600,000	40
Huaiyin	40,500	1,620,000	40
Kiangpu	30,000	2,400,000	80
Chinshan	2,000	160,000	60
Wuhsien	8,090	809,000	100
Tsingkiang	1,035	41,400	40
Luho	5,000	250,000	50
Founing	10,000	500,000	50
Taihsien	26,000	1,040,000	40
Kaoshun	750	45,000	60
Jukao	5,000	300,000	60
Tsungming	300	18,000	60
Suining	22,000	660,000	30
Kangyu	3,500	140,000	40
Yanchung	5,000	300,000	60
Chuansha	8,000	800,000	100
Tangshan	11,763	470,520	40
Haimen	150	9,000	60
Hsiaohsien	60,000	3,000,000	50
Huaian	5,588	335,280	60
Lienshui	180	8,100	45
Tanyang	41,820	2,509,200	60
Tungshan	126,666	6,333,300	50
Sungkiang	2,000	120,000	60
Liyang	1,850	92,500	50
Tsingpu	7,206	360,300	50
Chuyung	3,200	160,000	50
Taihsing	80,000	3,200,000	40
Kiangning	1,000	100,000	100
Kunshan	1,000	80,000	80
Hsinghua	2,000	120,000	60
Kiangtu	47,000	1,780,000	35—80
Nantung	2,000	140,000	70
Nanhui	1,000	70,000	70
Paoshan	1,000	70,000	70

Taitsang	1,000	80,000	80
Tungshan	20,000	1,000,000	50
Ihsing	2,500	200,000	80
Total	883,977	46,153,665	—

In addition to the buying and selling between the farmers of the Province, considerable numbers of cows and buffaloes are sold to merchants from Shantung, Tsingtao, Anhui, Shanghai, Nanking and Wuhsien. A cow and buffalo *hong* is established in the district of Tanyang. On the 1st, 6th, 11th, 16th, 21st and 26th of every month, dealers are gathered at this *hong* to buy or sell. Sometimes a merchant may ask the *hong* to buy for him. Prices of cows and buffaloes are fixed according to age and size. Ordinarily, a cow brings about 60 dollars, a buffalo, from $80 to $100, a cow of foreign species, $250 to $400. The following table shows the number of cows and buffaloes exported from various districts.

	No. of Heads Exported	Principal Markets
Chintan	1,500	Tanyang, Shanghai
Chitung	200	Shanghai
Kuanyun	4,000	Neighboring districts
Kaoyu	2,000	Kiangtu and Chinkiang
Kiangtu	12,000	Weihsien and Shanghai
Kiating	1,276	Shanghai, Wuchin, Wushih
Yencheng	8,000	Taihsien, Shanghai
Fenghsien	540	Shanghai
Tungtai	1,000	Taihsing
Tunghai	1,200	Tsingtao
Paoying	2,000	Nanking, Chinkiang, Kiangtu
Suchien	2,000	Nanking, Shanghai
Shuyang	20,000	„
Tsingkiang	535	Nanking, Chinkiang, S'hai
Luho	1,500	Nanking
Founing	5,000	Tanyang, Wuchin, Shanghai
Hsiaohsien	15,000	Tungshan, Tsinan
Huaian	428	Kiangtu, Tsingkiangpu
Tanyang	40,000	Shanghai

Taihsing	50,000	Nanking, Tungshan, Jukao, Shanghai
Tungshan	1,000	Shanghai
Kiangning	——	Nanking
Kunshan	——	Shanghai
Total	119,179	

PIGS

Pigs are the principal domestic animals raised in this Province, their number amounting to many millions. A few pigs can be found almost on every farm, as it is considered a very important sideline business by the farmers. There are three varieties of pigs in the Province, named after the places where they are raised, as the Taihsing variety, the Haichow variety, and the Wusih variety. The Taihsing variety is considered the best, with the Wusih variety next.

Nothing is wasted in a pig. Every part of it is used either as food or for industrial purposes. In recent years, the quantity of bristle exported to other countries has become so great that it is one of principal exports of the country.

Pigs are raised in very large numbers in almost every district of the Province on account of the abundant supply of animal feed. Taihsing, Founing, Jukao, Tungtai, Tsingkiang, Yencheng, and Suchien are most noted for pig raising. The following table shows the number of pigs raised in each district of the Province.

	No. of Pigs	Total Value	Average Price per Head
Chintan	30,000	$600,000	$20
Wukiang	111,591	2,455,002	22
Tanyang	56,480	1,412,000	25
Wuchin	8,500	212,500	25
Lienshui	75,000	1,200,000	16
Wusih	9,000	270,000	30
Lishui	3,012	60,240	20
Huaian	70,000	1,120,000	16
Chitung	7,000	140,000	20
Haimen	5,000	80,000	16

Kuanyun	10,000	200,000	20
Hsiaohsien	15,000	225,000	15
Kaoyu	100,000	2,000,000	20
Icheng	16,000	320,000	20
Tangshan	8,403	168,060	20
Kiating	43,500	1,087,500	25
Yencheng	120,000	2,160,000	18
Kiangyin	——	1,000,000	20
Tungtai	300,000	5,100,000	17
Fenghsien	15,000	450,000	30
Peihsien	7,531	150,620	20
Fenghsien	9,450	189,000	20
Chinkiang	40,000	1,200,000	30
Tunghai	7,000	140,000	20
Ssuyang	40,000	720,000	18
Paoying	85,000	1,530,000	18
Shuyang	85,000	1,360,000	16
Suchien	150,000	2,400,000	16
Huaiyin	60,000	900,000	15
Jukao	345,650	8,641,250	25
Kaoshun	25,000	500,000	20
Taihsien	40,000	720,000	18
Kunshan	60,000	1,500,000	25
Kiangning	30,000	750,000	25
Taihsing	480,000	11,040,000	23
Chuyung	46,080	921,600	20
Tsingpu	114,492	1,946,364	17
Liyang	65,680	1,313,600	20
Sungkiang	50,000	1,500,000	30
Tungshan	37,000	592,000	16
Founing	500,000	7,500,000	15
Luho	25,000	500,000	15
Tsingkiang	196,148	3,922,960	20
Wuhsien	117,673	2,941,825	25
Chinshan	9,000	180,000	20
Kiangpu	50,000	1,000,000	20
Chuansha	30,000	1,200,000	40
Yangchung	13,000	260,000	20
Kangyu	75,000	1,500,000	20
Tsungming	3,000	75,000	25
Suining	8,000	160,000	20
Taitsang	80,000	1,600,000	20
Kiangtu	98,000	1,880,000	15—20

Nanhui	30,000	810,000	27
Hsinghua	5,000	125,000	25
Nantung	4,000	120,000	30
Paoshan	3,500	105,000	30
Tungshan	9,000	270,000	30
Ihsing	45,000	1,350,000	30
Total	4,132,690	83,774,521	—

Ordinarily, farmers sell their pigs to the local butchers. Sometimes pig merchants visit farms and buy a number of pigs, and ship to larger cities, where there are usually a number of pig *hong*, through which these merchants sell their pigs to local butchers, pay the *hong* a commission of 3 per cent. The price of pigs fluctuates frequently in a city, varying with the supply of living pigs and the demand for pork. The present price in Shanghai is about $25 per picul, while prices in the country vary from $12 to $20.

The following table shows the number of pigs exported from various districts of the Province and the principal markets:

	No. of pigs Exported	Principal Markets
Chintan	10,000	Wusih, Wuchin, Icheng
Wuchin	——	Shanghai, Chekiang
Lienshui	60,000	S'hai, Tsingkiangpu, C'kiang
Lishui	60,000	——
Huaian	30,000	——
Haimen	3,500	——
Kuanyun	3,000	——
Hsiaohsien	2,000	Tungshan
Kaoyu	20,000	Chinkiang, Nanking, S'hai
Icheng	6,000	Nanking, Chinkiang
Kiangtu	4,000	Nanking
Yencheng	36,000	Shanghai
Peihsien	3,466	Tungshan, Shanghai
Chinkiang	9,000	Nanking, Shanghai
Tunghai	1,500	Shanghai
Ssuyang	30,000	Shanghai, Chinkiang
Paoying	30,000	„ „
Suchien	25,000	„ „
Shuyang	50,000	Nanking, Wuhsien, Shanghai
Huaiyin	40,000	Chekiang and other southern Provinces
Jukao	16,268	Nanking, Chinkiang, S'hai.

Kaoshun	5,000	Nanking
Taihsien	25,000	Wuhsien, Shanghai
Kiangning	25,000	Nanking
Taihsing	280,000	Shanghai, Hangchow
Chuyung	815	Chinkiang
Liyang	19,680	Shanghai
Sungkiang	5,000	Shanghai
Tanyang	25,000	Wuhsien, S'hai, Hangchow
Founing	50,000	Shanghai
Luho	15,000	Nanking
Tsingkiang	37,248	Wusih, Wuhsien
Chinshan	1,000	Shanghai
Yangchung	4,000	Shanghai
Kangyu	10,000	Shanghai, Tsingtao
Tungtai	150,000	Shanghai, Chekiang
Kiangyin	60,000	Shanghai, Hangchow

SHEEP AND GOATS

The number of goats and sheep raised in this Province is very considerable, next only to that of cows or pigs. In districts north of the Yangtse, sheep outnumber goats, while in the southern districts, the condition is reversed. The districts of Wukiang, Tsingkiang, Fenghsien, Chitung, Taihsing and Taihsien are noted for sheep and goat raising. The following table shows the number of sheep and goats raised in each district of this Province:

	No. of Sheep and Goats	Total Value	Average Price per head
Huaiyin	1,500	$6,000	$4
Shuyang	3,000	15,000	5
Suchien	13,000	78,000	6
Paoying	1,000	4,000	4
Ssuyang	1,000	3,000	3
Tunghai	500	2,500	5
Fenghsien	45,720	137,160	3
Peihsien	10,543	31,629	3
Tungtai	3,000	15,000	5
Yencheng	10,000	40,000	4
Kiating	2,125	8,500	4
Kaoyu	10,000	30,000	3
Kuanyun	10,000	50,000	5
Chitung	25,000	75,000	3
Lishui	710	2,130	3
Wuchin	2,500	10,000	4
Wukiang	78,114	234,342	3
Chintan	6,000	18,000	3

Tanyang	12,500	62,500	5
Tunghsien	40,000	120,000	3
Sungkiang	3,000	15,000	5
Liyang	4,420	17,680	4
Tsingpu	15,260	76,300	5
Chuyung	456	1,824	4
Taihsing	20,000	60,000	3
Kiangning	1,000	5,000	5
Kunshan	3,000	9,000	3
Kiangpu	5,000	25,000	5
Chinshan	2,500	10,000	4
Wuhsien	10,010	30,030	3
Tsingkiang	69,000	207,000	3
Luho	10,000	30,000	3
Founing	5,000	10,000	2
Taihsien	5,000	10,000	2
Kaoshun	800	1,600	2
Jukao	10,000	10,000	2
Suining	3,000	9,000	3
Tsungming	2,500	12,500	5
Kangyu	2,000	20,000	10
Yangchung	17,000	51,000	3
Chuansha	5,000	15,000	3
Tangshan	18,606	39,212	2
Haimen	13,850	34,625	2.5
Hsiaohsien	15,000	45,000	3
Huaian	10,000	30,000	3
Lienshui	2,000	6,000	3
Chinkiang	550	4,400	8
Fenghsien	30,000	150,000	5
Kiangyin	10,000	40,000	4
Icheng	5,000	20,000	4
Nantung	10,000	40,000	4
Hsinghua	10,000	50,000	5
Nanhui	10,000	40,000	4
Kiangtu	6,500	25,500	5
Taitsang	16,000	64,000	4
Paoshan	3,000	15,000	5
Total	647,984	2,142,432	—

HORSE, DONKEY AND MULE

Although a considerable number of these animals is found in this Province, very few of them are sold to other provinces on account of the great local demand. The following table shows the number of these animals in various district of this Province.

	Donkey		Horse		Mule	
	Number	Value	Number	Value	Number	Value
Huaiyin	9,705	$194,000	20	$ 1,600	20	$ 1,600
Suchien	10,500	315,000	3,200	25,600	1,900	152,000
Ssuyang	2,000	60,000	——	——	60	3,600
Tunghai	2,500	187,500	30	1,800	30	2,100
Fenghsien	11,400	252,120	11,230	561,500	820	49,200
Peihsien	10,505	252,100	5,271	263,550	268	21,040
Lishui	450	13,500	144	144,000	84	4,200
Tanyang	550	22,000	30	2,400	40	1,600
Chintan	250	7,500	150	9,000	50	2,000
Tungshan	95,000	1,900,000	12,666	633,300	6,333	379,980
Chuyung	2,160	64,800	45	3,000	288	23,040
Taihsing	32,000	1,600,000	32,000	1,920,000	16,000	800,000
Kiangning	500	15,000	100	10,000	200	10,000
Wuhsien	986	39,440	213	14,910	96	4,800
Tsingkiang	2,000	60,000	100	6,000	30	1,500
Founing	2,000	60,000	300	15,000	500	25,000
Suining	25,000	625,000	1,200	72,000	500	25,000
Kangyu	5,000	150,000	100	7,000	500	35,000

Tangshan	29,408	588,160	1,960	117,600	196	15,680
Hsiaohsien	15,000	450,000	3,000	180,000	900	72,000
Lienshui	4,000	80,000	25	1,500	20	1,200
Shanghai	—	—	1,500	150,000	200	16,000
Kiangtu	40,480	819,300	6,200	156,000	1,200	60,000
Tungtai	1,200	24,000	2,000	160,000	150	10,500
Kiangpu	4,000	120,000	1,500	105,000	1,500	75,000
Kuanyun	5,000	150,000	—	—	1,000	30,000
Huaian	7,906	237,180	—	—	913	73,040
Chinkiang	400	12,000	200	20,000	—	—
Nantung	650	19,500	100	8,000	—	—
Shuyang	9,705	125,000	—	—	—	—
Paoying	1,500	45,000	—	—	—	—
Yencheng	2,000	60,000	—	—	—	—
Kiating	700	6,000	—	—	—	—
Kaoyu	5,000	100,000	—	—	—	—
Chitung	900	27,000	—	—	—	—
Wuchin	600	24,000	—	—	—	—
Wukiang	300	9,000	—	—	—	—
Sungkiang	400	12,000	—	—	—	—

Liyang	135	2,700	—	—	—	—
Tsingpu	900	18,000	—	—	—	—
Kunshan	500	15,000	—	—	—	—
Chinshan	2,000	60,000	—	—	—	—
Luho	1,000	30,000	—	—	—	—
Taihsien	3,500	105,000	—	—	—	—
Kaoshun	4,000	100,000	—	—	—	—
Jukao	1,000	30,000	—	—	—	—
Tsungming	200	8,000	—	—	—	—
Yangchung	1,500	45,000	—	—	—	—
Chuansha	200	6,000	—	—	—	—
Haimen	1,250	37,500	—	—	—	—
Wusih	400	12,000	—	—	—	—
Fenghsien	100	3,000	—	—	—	—
Kiangyin	600	18,000	—	—	—	—
Icheng	500	15,000	—	—	—	—
Hsinghua	950	33,250	—	—	—	—
Nanhui	500	20,000	—	—	—	—
Taitsang	150	6,000	—	—	—	—
Paoshan	60	2,400	—	—	—	—
Ihsing	690	27,600	—	—	—	—

POULTRY

Chickens, ducks, geese and pigeons are raised in enormous numbers by farmers of this Province, owing to the abundant supply of feeding materials.

Several varieties of chickens are found in this Province, the following being the most common:

Nantung Variety—This kind known as *Chiuching-huang* (九斤黃) is most commonly raised north of the Yangtse. When fully grown, it weighs from four to nine catties. The female lays from 80 to 120 eggs annually.

Chuansha Variety—This is the most popular variety in districts south of the Yangtse, particularly in those around Shanghai. It weighs from 3 to 6 catties, and a female lays from 80 to 120 eggs a year.

There is a third variety with white feathers and black bones, a particular product of China. The female lays only from 40 to 50 eggs a year.

The ducks produced in districts north of Yangtse are medium in size, weighing about from 4 to 6 catties each. The female lays from 80 to 120 eggs a year. The popular variety found in the southern districts is called *Ssuching-ya* (泗涇鴨), which, though small in size (weighing only from 2 to 4 catties), is raised for its eggs, as it lays about 180 eggs annually. In Kiating and Taitsang, there is another kind of duck, black in color and weighs about 8 catties each.

The districts of Wukiang, Peihsien, Fenghsien and Luho produce a considerable number of ducks annually.

Many varieties of pigeons are found in the Province.

The following table gives the number of chickens raised annually in each district of this Province:

	Number	Total Value	Average Price per head
Huaiyin	120,000	$ 42,000	25 cts.
Shuyang	200,000	60,000	30
Suchien	668,000	268,800	40
Paoying	300,000	60,000	20
Ssuyang	25,000	5,000	20
Tunghai	145,000	29,000	20
Kuanyun	300,000	90,000	30
Chintan	200,000	200,000	100
Wukiang	929,930	371,972	40
Tanyang	200,000	120,000	60
Wuchin	60,000	60,000	20
Lishui	3,582	14,328	40
Chitung	145,000	145,000	100
Kaoyu	500,000	200,000	40
Kiating	212,500	170,000	80
Yencheng	450,000	135,000	30
Tungtai	900,000	630,000	70
Peihsien	123,568	24,714	20
Fenghsien	185,000	37,000	20
Tungshan	760,000	112,500	15
Sungkiang	60,000	60,000	100
Liyang	450,000	180,000	40
Tsingpu	24,400	9,763	40
Chuyung	435,570	217,785	50
Taihsing	480,000	480,000	100
Kiangning	1,000,000	500,000	50
Kunshan	350,000	280,000	80
Kiangpu	36,000	28,800	80
Luho	150,000	90,000	60
Wuhsien	506,167	506,267	100
Chinshan	80,000	40,000	50
Tsingkiang	414,222	331,378	80
Founing	300,000	120,000	40
Taihsien	600,000	420,000	70
Kaoshun	300,000	300,000	100
Jukao	754,526	980,880	130
Suining	200,000	60,000	30
Tsungming	200,000	200,000	100
Kangyu	200,000	50,000	250
Yangchung	500,000	500,000	100
Chuansha	40,000	40,000	100
Tangshan	176,451	35,290	20
Haimen	77,000	77,000	100
Hsiaohsien	450,000	135,000	30
Huaian	420,000	210,000	50
Lienshui	203,000	60,900	30
Wusih	60,000	42,000	70
Chinkiang	1,200,000	840,000	70

Fenghsien	600,000	240,000	40
Kiangyin	1,000,000	800,000	80
Icheng	60,000	42,000	70
Nanhui	300,000	300,000	100
Nantung	200,000	200,000	100
Taitsang	300,000	240,000	80
Hsinghua	350,000	210,000	60
Kiangtu	800,000	240,000	30
Paoshan	100,000	100,000	100
Shanghai	50,000	50,000	100
Tungshan	600,000	300,000	50
Ihsing	600,000	480,000	80
Total	21,054,916	12,782,277	

Besides local consumption, poultry is sold to merchants from other localities, who send purchasers to various villages and farms to buy from farmers. Chickens are sold at about 40 cents per catty; duck at $1.00 each, goose at $1.20, and pigeon 50 cents. After a sufficient number has been collected, it is sold to restaurants or shipped to large cities in bamboo crates. The following table shows the approximate number of chickens exported from various districts of the Province:—

	No. Exported	Markets
Huaiyin	90,000	Southern districts
Shuyang	150,000	Tsingkiang, Shanghai
Suchien	200,000	Chinkiang, Shanghai
Paoying	100,000	" "
Ssuyang	15,000	" "
Tunghai	43,000	" "
Kuanyun	100,000	Southern districts
Chintan	50,000	Shanghai
Wukiang	400,000	Wuhsien, Shanghai
Lishui	90,000	Neighboring districts, Shanghai
Chitung	90,000	Shanghai
Kaoyu	200,000	"
Kiangtu	100,000	"
Kiating	106,250	"
Yencheng	250,000	"
Tungtai	700,000	"
Peihsien	61,784	Tungshan, Shanghai
Fenghsien	90,000	" "
Liyang	5,185	Shanghai
Tsingpu	12,200	"
Taihsing	240,000	"

Kiangning	800,000	Nanking
Kunshan	200,000	Shanghai
Luho	54,000	Nanking
Tsingkiang	104,222	Wusih, Shanghai
Founing	270,000	Shanghai
Taihsien	300,000	„
Kaoshun	120,000	Nanking
Jukao	642,390	Shanghai
Tsungming	170,000	„
Yangchung	250,000	Shanghai, Wuchin, Wuhsien
Haimen	60,000	Shanghai
Hsiaohsien	225,000	Nanking
Huaian	200,000	Shanghai, Nanking, Chinkiang
Lienshui	103,000	Tsingkiangpu, Chinkiang
Chinkiang	350,000	Nanking, Shanghai
Fenghsien	250,000	Shanghai
Kiangyin	200,000	Wusih, Shanghai
Icheng	20,000	Nanking, Shanghai
Taitsang	180,000	Shanghai
Hsinghua	130,000	Southern districts
Nantung	50,000	Shanghai
Total	7,772,031	

EGGS

Eggs produced in this Province consist principally of chicken and duck eggs. Hsinghua, Nantung, Jukao, Taihsien, Tsungming, Wusih, Kiangyin, Wuchin, Fenghsien and Peihsien are the principal producing centers of chicken eggs, while duck eggs come mainly from Sungkiang, Chuansha, Wukiang, Ihsing, Kaoyu, Luho, Kiangtu, Hsinghua and Nanking. The following table shows the approximate number of eggs produced annually in each district of this Province:—

	Egg Output (Mille)	Total Value ($1,000)
Fenghsien	11,100	111
Tungtai	4,800	96
Kiating	8,500	170
Chitung	10,000	200
Wuchin	2,000	40
Wukiang	3,000	60
Tunghai	16,200	162
Paoying	20,000	400
Shuyang	5,000	100
Chintan	10,000	300
Kaoshun	20,000	400

Founing	5,000	75
Chinshan	9,000	180
Peihsien	10,000	100
Yencheng	5,000	100
Kaoyu	25,000	500
Lishui	597	12
Tanyang	4,000	80
Kuanyun	14,500	190
Ssuyang	5,500	110
Suchien	30,000	300
Huaiyin	12,000	156
Jukao	4,164	125
Taihsien	12,000	240
Tsingkiang	2,485	50
Wuhsien	4,000	80
Luho	5,500	83
Chuansha	2,500	50
Kangyu	5,000	63
Suining	10,000	100
Huaian	8,400	168
Haimen	7,000	140
Kunshan	13,400	268
Taihsing	24,000	480
Tsingpu	25,000	375
Sungkiang	4,000	80
Icheng	3,500	70
Fenghsien	8,400	168
Wusih	8,000	160
Nantung	10,000	200
Kiangtu	24,000	280
Paoshan	8,000	160
Ihsing	4,000	80
Kiangpu	10,000	200
Yangchung	20,000	200
Tsungming	4,000	100
Lienshui	4,060	61
Hsiaohsien	1,980	40
Tangshan	1,426	14
Kiangning	50,000	1,000
Chuyung	13,067	196
Liyang	2,000	40
Tungshan	52,990	530
Kiangyin	35,000	700
Chinkiang	45,000	900
Hsinghua	52,500	1,050
Nantung	10,000	200
Taitsang	12,000	240
Tungshan	10,000	100
Total	4,189,107	12,832

BRISTLE

Although bristle is found in every district of this Province, as pigs are raised by almost every farmer, the products of Tunghai, Hsinghua, Kaoyu, Peihsien, Hsiaohsien and Nanking are of the best quality. The bristle is about two inches in length, either white or black in color. It is very strong and durable, suitable for making carpets, rugs, felt caps, etc. The products of other districts are inferior in quality. Bristle is collected by *hong* at a price varying from $20 to $100 per picul, and then brought to market. The products of northern districts are usually exported to the province of Shantung, while those of the southern districts are sold in Shanghai or Nanking. The following table shows bristle output of each district in this Province:—

	Output (Catties)	Total Value	Average Price per catty
Huaiyin	1,500	$ 450	30 cts.
Paoying	15,000	3,000	20 „
Ssuyang	10,000	2,000	20 „
Tunghai	1,600	1,120	70 „
Kuanyun	7,000	2,100	30 „
Kaoshun	10,000	3,000	30 „
Tungtai	50,000	30,000	60 „
Fenghsien	100	100	$1.00
Tungshan	2,250	2,250	$1.00
Liyang	1,200	1,200	$1.00
Taihsing	17,000	8,500	50 cts.
Kiangning	5,000	1,500	30 „
Luho	8,000	4,000	50 „
Founing	3,000	1,500	50 „
Taihsien	7,500	2,250	30 „
Kaoshun	1,400	420	30 „
Chuansha	800	800	$1.00
Huaian	5,000	1,000	20 cts.
Lienshui	7,500	2,250	30 „
Chinkiang	2,000	1,000	50 „
Fenghsien	2,000	1,000	50 „
Icheng	20,000	6,000	30 „
Hsinghua	5,000	2,000	40 „
Jukao	50,000	25,000	50 „
Total	232,850	102,440	

GAMES

A great variety of games is found in this Province, pheasant, teal and hare being the most numerous. Owing to the lack of refrigeratory equipment, most of the games are consumed locally, little being sold to other places. The districts of Chuansha, Sungkiang, Taitsang and Kiating, however, export considerable quantities of games to Shanghai owing to their proximity to the later city. In most cities *hongs* are established, and hunters sell their games through them. The following tables show the average number of hares, teals and pheasants caught in various districts of the Province:—

HARES

	Number	Total Value
Tungtai	800	$ 400
Yencheng	9,000	3,600
Tunghai	500	200
Paoying	200,000	80,000
Suchien	30,000	12,000
Huaiyin	1,000	500
Kiangning	20,000	10,000
Taihsing	500	250
Hsinghua	10,000	5,000
Chuyung	396	198
Lishui	3,000	1,500
Tungshan	10,000	5,000
Founing	10,000	5,000
Luho	50,000	25,000
Lienshui	2,000	1,000
Huaian	5,000	2,500
Icheng	500	250
Kiangyin	5,000	2,500
Fenghsien	500	250
Total	358,196	155,148

PHEASANTS

	Number	Total Value
Tungtai	1,000	$ 500
Yencheng	15,000	6,000
Kaoshun	10,000	5,000
Tunghai	1,000	400
Paoying	700,000	280,000
Suchien	1,000	400
Huaiyin	2,000	800
Kiangning	50,000	20,000
Taihsing	6,000	2,400
Chuyung	9,000	3,600
Liyang	20,000	8,000
Sungkiang	500	200
Tungshan	20,000	8,000
Founing	20,000	8,000
Luho	2,400	960
Chuansha	500	200
Lienshui	4,000	1,600
Huaian	1,000	400
Icheng	1,000	500
Kiangyin	5,000	2,500
Fenghsien	1,000	500
Hsinghua	20,000	10,000
Total	890,400	359,960

TEALS

	Number	Total Value
Yencheng	15,000	$9,000
Kuanyun	20,000	8,000
Tunghai	500	200
Paoying	600,000	240,000
Suchien	2,000	800
Huaiyin	2,000	800
Kiangning	30,000	12,000
Taihsing	6,000	2,400
Chuyung	9,000	3,600
Lishui	13,000	5,200
Tungshan	500	200
Founing	300,000	90,000
Luho	1,000	500
Chuansha	500	200
Lienshui	4,000	1,600

Huaian	5,000	2,000
Icheng	500	200
Kiangyin	10,000	4,000
Fenghsien	500	200
Hsinghua	20,000	8,000
Total	1,039,500	388,900

SKINS AND HIDES

Skins and hides are produced in almost every district of this Province, bufallo and cow hides and goat and sheep skins being most important. The districts of Tungshan, Kiangpu, Fenghsien and Peihsien are noted for the production of cow and buffallo hides, and Peihsien, Fenghsien, Hsiaohsien and Huaiyin, for that of goat and sheep skins. The following table shows the approximate number of hides and skins produced in various districts of this Province:—

	Pieces	Total Value
Huaiyin	10,000	$90,000
Suchien	5,000	30,000
Ssuyang	500	5,000
Tunghai	1,500	9,000
Kuanyun	1,000	5,000
Peihsien	20,000	120,000
Fenghsien	29,110	28,726
Tungshan	19,500	49,500
Taihsing	105	2,100
Luho	3,700	18,500
Founing	280	4,200
Tangshan	11,329	22,927
Hsiaohsien	30,000	160,000
Chinkiang	3,600	21,600
Kiangyin	2,000	40,000
Icheng	2,500	15,000
Hsinghua	200	1,600
Total	141,324	628,153

BOOK SEVEN

MINING

CHAPTER I

COAL

COAL deposits in the Province are scattered in Tungshan, Hsiaohsien, Kiangning, Chuyung, Ihsing etc. But owing to financial difficulties and inadequate means of transportation, most of the deposits have not been worked. The following is a brief description of some of the most important deposits in the Province:—

TUNGSHAN

At Tungshan, coal deposits are located 80 *li* north-east of the city, with coal-containing lodes distributed widely in the regions of Chia Wang (賈汪) and Ching Shan Chuan (青山泉). The deposits were originally operated by the Chia Wang Coal Mining Company (賈汪煤礦公司) but in 1930 a new organization known as the Hua Tung Coal Mining Co. Ltd., (華東煤礦股份有限公司) took over the management. The new concern is capitalized with $1,600,000, and was registered with the Ministry of Industry.

The mine is equipped with an adequate system of communications. A light railway, 30 *li* in length, connects the mine with the Lunghai Railway at Liu Chuan (柳泉), from whence the coal can be shipped northward to Shantung and southward to Pukow and the Yangtse ports. Yuichwang (游莊), 10 *li* from the mine, is an inland water port, which connects Tsining (濟甯), a western district of Shantung, at one direction, and Tsingkiangpu (清江浦), a famous town in Northern Kiangsu, at the other.

The mining area covers a large expansion of land. In addition to the old area of 330 *mou*, the newly operated region is divided into four districts, the Chia-chia-wang (賈家汪), 4,405 *mou*, Er-ta-kou-yuan (二大溝沿), 4,520 *mou*, Ching-shan-chuan (青山泉), 4,366 *mou*, and Wang-chuang-tsu (王莊子), 1,184 *mou*.

The geological formation of Chia Wang coal fields is formed by limestone of the Ordovician period. Coal deposits are found in two layers, the first layer, with a thickness of five feet, being 157 feet below the ground level, while the second layer, with a thickness of from six to eight feet, is 20 feet below the first layer. According to the investigation of an expert of the Peiping Geological Institute, the third and fourth layers of the Chia Wang coal field have a thickness of about two feet each, but as they have not yet been worked, details are unavailable.

Owing to lack of statistical data the actual annual output of the mine is unknown. But as the coal layer in the old mining area is estimated at 650 feet from east to west and 580 feet from north to south, the possible area of coal covers about 377,000 square feet, and judging from the thickness of coal layer of 12 feet, 4,520,000 tons of coal can be worked. Thus, if taking the area of the newly operated fields, 14,475 *mou*, the total tonnage will safely be over ten millions.

The coal of the Hua Tung Mine is of the bituminous variety, containing high percentage of volatile matter and ash, and is therefore very fit for use in factories, locomotives, and steamers. It can also be made into high grade coke, if mixed with other coal containing less ash. The following tables show the various chemical analyses of the coal:—

Analyzed By	Water	Volatile Matter	Carbon	Sulphur	Ash	Calories
Third District Mining Supervisory Office	—	32.24	—	—	6.87	—
Industrial Laboratory of the former Ministry of Agriculture and Commerce	0.11	29,54	51,58	1.07	—	55.00
Shanghai Chemical Laboratory	1.55	25.90	59.75	0.90	12.80	—

According to an unofficial report, some 5,000 tons are turned out annually. The coal is chiefly sold along the Tientsin-Pukow Railway, the eastern section of the Lunghai Railway, and the Nanking-Shanghai Railway. The freight is 60 cents from the mine to Liuchuan, 50 cents from Liuchuan to Tungshan, and $2 from Liuchuan to Pukow.

HSIAOHSIEN

At Hsiaohsien, coal deposits are found in a place known as Paituchai (白土寨), some 30 *li* east of the city, between two high mountains of Changyen (長崖) and Chingpin (錦屏). Coal-containing lodes are found in the vicinity of Kushan (孤山), Toshan (朶山), Chinglungshan (青龍山) and Taishan (台山). Although attempts to excavate the mineral have been made first by Ni Tao-chieh (倪道杰) in 1924 and later by the Kiangsu Provincial Department of Agriculture and Mine in 1928, yet owing to financial difficulties, and various other reasons, operation has not yet started.

The total deposit of the field is estimated at 3,000,000 tons, while the quality of the coal is analyzed as follows by the Industrial Laboratory of the former Ministry of Agriculture and Commerce:

Water	Volatile Matter	Carbon	Ash	Sulphur	Calories
0.23	31.28	55.08	12.91	0.60	61.60

As the field is only 20 *li* from the Tientsin-Pukow Railway, a light railway connecting the field and the Railway will greatly facilitate coal transportation.

OTHER COAL DEPOSITS

Kiangning.—In Kiangning there occur two coal deposits, one in the Peikuhsiang (北固鄉) and the other in Kiangchenhsiang (江乘鄉). The former was worked in 1922 by the Hua Mou Company (華茂公司) with a capital of $60,000. As the method followed was very primitive and transportation very difficult, the company incurred great losses and closed down after a short period of operation. The Kiangchenhsiang field has been worked since 1925 with a capital of over $10,000. The mine has five shafts and 70 workmen are employed. The method applied is very primitive.

Chuyung.—Chuyung has two coal deposits, one located at Chinglungshan (青龍山), near Lungtan (龍潭), and the other at Hochungtsun (河沖村), in the northern district. Though the first deposit was surveyed by the Provincial Department of Agriculture and Mines in 1928, yet no report has ever been made known. The second deposit was once worked by a private enterprise, producing 20 or 30 tons daily, but it has been suspended since 1926.

Ihsing and Liyang.—Coal deposits are found in the vicinity of Changchu (張渚) in Ihsing and Hsiaotsushan (小子山) in Liyang. The Provincial Department of Agriculture and Mine has attempted to make a survey of the fields but the plan was later suspended.

Tung Ting Hsi Shan (庭洞西山).—Coal fields are found in Tung Ting Hsi Shan, an island in the Taihu Lake near Wuhsien. The lode is five feet thick, and has not yet been worked.

CHAPTER II

IRON

KIANGSU'S iron deposits are found in Tungshan, Kiangning, Luho, Chinkiang, Chuyung, etc. Like the coal deposits, only a few of them have been worked, and a brief description of some of the principal ones are appended as follows:—

TUNGSHAN

At Tungshan, iron deposits are found at Likuoyih (利國驛), a suburb of the city. The mine was worked as early as 206 B.C. Operations on a large scale, however, did not begin until 1883 but work was again suspended on account of the Sino-French War of 1883-1885. At present, the mine has been taken over by the Provincial Government, and worked as a Provincial enterprise.

Coal fields of Likuoyih mine are scattered here and there, especially at Yangshan (羊山), Chiuchiashan, (裘家山), eastern and western Mashan (馬山) Tungshantao (銅山島), Tiehshan (鐵山) and Li Chia Wan Shan (勵家灣山), their respective area being as follows:

	(*Mou*)
Tungshantao	175
Eastern Mashan	19.5
Southern Mashan	100
Chiashan (家山)	32.5
Tungshan (東山)	155
Western Mashan	30
Chiuchiashan	110
Yangshan	330
Tiehshan	116
Li Chia Wan Shan	110

Among these districts, only reserves of two are estimable. The Yangshan deposit, with an area of 2,900 square meters, and 40 meters deep, contains about 370,000 tons of iron ore, and the Tiehshan deposit, 12,000 square meters in area and 70 meters deep, has a reserve of 2,700,000 tons.

The composition of the ore is analyzed as follows:

	Ferric Oxide.	Ferrous Oxide.	Iron	Silicon Dioxide.	Phosphorus	Sulphur
Northern Yangshan	65.01	6.42	53.35	15.88	0.02	0.15
Likuoyihtsun(利國驛村)	58.51	9.51	53.18	18.66	0.04	0.11
Southern Yangshan	58.18	14.91	55.65	11.66	0.03	0.045
Chiuchiashan	—	—	56.60	12.18	0.11	0.11
Eastern Mashan	—	—	58.40	15.70	0.11	0.58
Tiehshan	—	—	57.68	9.19	0.10	0.36
Lutung (圖東)	—	—	65.24	4.70	0.06	0.63

KIANGNING

At Kiangning, iron deposits are found at Feng Huang Shan (鳳凰山). Judging from the traces of shallow shafts, the deposit must have been worked long ago. But operations of a large scale did not begin until twenty years ago, when in 1914, the Peking Government appointed Mr. F. R. Tegengran, an expert of the Ministry of Agriculture and Commerce, to have a personal survey of the deposits. The result of his investigation shows there is a total reserve of 40,000,000 tons. In 1921 work was started under the direction of the Government, and the output then turned out was very considerable.

Aside from Fenghuangshan, iron deposits are also scattered at Hsiaochangshan (小張山), Neushan (牛山), and Pientanshan (扁塘山). The ore can be easily shipped by Lishuiho (溧水河), a small creek about 25 kilometers south-east of Niushushan (牛首山), 3 kilometers south-west of Meilinkuan (秣陵關), and 30 *li* to the Yangtse River.

The lode extends over a length of 900 meters, varying in width and in the degree of inclinations. According to the estimate of J. G. Anderson, the then technical adviser of the mine, the total area is about 23,600 square feet and the reserve amounts to 4,300,000 tons.

The quality of ores found at Fenghuangshan is by no means uniform, their composition being as follows:

Samples Collected by F. R. Tegengran

	Iron	Silicic Dioxide	Phosphorus	Sulphur
Fenghuangshan Proper	59.52	12.18	0.07	0.04
Southern part	55.39	19.12	0.20	0.01
Central part	61.47	10.49	0.34	0.01
Siaochangshan	62.26	5.88	0.06	0.03

Samples Collected by J. G. Anderson

Sample No.	Iron	Silicic Dioxide	Phosphorus	Sulphur
1	44.66	29.91	0.05	0.03
2	36.94	38.13	0.21	0.02
3	50.72	21.45	0.18	0.03
4	54.58	15.34	0.04	0.03
5	52.38	16.92	0.31	0.02
6	47.42	17.72	1.21	0.04
7	54.92	13.28	0.34	0.03
8	56.79	10.98	0.29	0.09
9	59.98	6.27	0.41	0.02
10	55.03	12.54	0.33	0.09
11	23.99	58.98	0.15	0.07
12	25.78	51.27	0.06	0.04
13	40.80	32.24	0.40	0.04
14	39.15	33.76	0.08	0.05
15	55.13	14.99	0.25	0.09
16	45.48	27.89	0.25	0.08
17	38.18	34.70	0.12	0.03
18	48.11	20.81	0.10	0.08
19	52.93	16.02	0.24	0.05
20	41.08	30.08	0.06	0.08
21	45.49	22.93	0.22	0.08
22	40.82	16.95	0.84	0.06
23	39.52	23.96	1.76	0.05
24	44.95	26.17	0.29	0.04
25	57.43	10.34	0.23	0.02
26	49.38	25.28	0.52	0.03
27	28.94	50.14	0.06	0.07

28	22.45	27.37	0.10	0.07
29	53.76	13.68	0.22	0.07
30	46.72	19.91	0.33	0.04
31	46.99	21.05	0.35	0.04
32	51.53	16.23	0.50	0.02
33	50.63	19.85	0.19	0.03
34	46.53	22.85	0.60	0.05
35	35.84	43.78	0.07	0.01
36	50.28	17.15	0.12	0.09
37	50.72	18.46	0.04	0.07
38	49.85	13.25	0.05	0.07
39	54.26	18.02	0.23	0.05
40	53.37	15.08	0.10	0.01
Average	45.94	23.46	0.30	0.05

In addition to the Fenghuangshan fields, iron deposits are found in Kiangning in three other places, described as follows:

Niutoushan (牛頭山).—The hill of Niutoushan is situated 14 kilometers south of Kiangning city. The iron field covers an area of 117 *mou*. The ore is visible on the western and northern slopes as well as on the summit. Ores of high quality are exposed on the slope, while that on the summit is of inferior grade.

In 1919, the mine was once worked by the Ta Lu Company (大陸公司), but it was suspended after a short period of operation.

An analysis of a sample collected from this place made by the Kailan Mining Administration shows the ore has the following constituents: iron, 32.76 per cent.; sulphur, 0.19 per cent; phosphorous, 0.21 per cent; aluminium oxide, 12.57 per cent; calcium oxide, 2.03 per cent; magnesium oxide, 0.30 per cent; and lost by calcination, 5.15 per cent.

Chinlungshan (靜龍山)—is a comparatively low hill situated a few kilometers south of Niutoushan. Extensive operations were undertaken by the Ta Lu Company in 1919 but only resulted in proving that there are only a few narrow veins of hematite ore, yielding a total of about 50,000 tons. The mine is therefore very difficult to be worked.

Chienshanwa (前山窪).—The iron deposit of Chienshanwa has an area of 207 *mou*. It was worked in 1919 by Tao Pao-chin (陶保晉), but operations were suspended in July, 1930.

OTHER DISTRICTS

Luho.—In Luho a small iron field is found at Yehshan (冶山), about 30 kilometers north-east of Pukou, near the border of Anhui Province. Six iron-containing lodes, 30 to 40 meters in length and three meters in width, are found among the limestone and quartz layers. The amount of the reserve is estimated at 40,000 tons.

Chinkiang.—In the vicinity of Chinkiang several minor occurences of iron ore are found, one of which situated at 12 kilometers south-west of Kaotze (高資), a station on the Nanking-Shanghai Railway, and 8 kilometers from the Yangtse River, is said to have a length of 2,000 feet with a varying thickness of four or five meters. The reserve is small and the quality of the ore is rather poor, as the best sample contains 40-50 per cent of iron. It was worked in 1923 by Hsu Pin-kui (許炳奎) but operations were suspended in 1926 owing to difficulty in transportation.

Chuyung.—Small iron deposits in Chuyung are found scattering in the northern corner of the district along Hsiyenkang (西堰崗), Ssufanshan (四方山), and Shianglushan (香爐山). The total area is estimated at 264 *mou*.

Tungshan.—Tungshan has a small iron field, 406 *mou* in area, at Wangchiayin (王家營), operations have not been started.

CHAPTER III

SALTPETER

SALTPETER is one of the staple mineral products of China, varieties from Shantung, Kiangsu, Hunan and south-western provinces being all regarded as having pure quality and rich in nitrogen. In Kiangsu it is found in abundance in such districts as Tungshan, Tangshan, Suchien, Suining, Hsiaohsien, Peihsien, and Fenghsien, Other districts like Tunghai, Kuanyun and Kangyu also yield a considerable amount.

Saltpeter is very useful in making fertilizers, nitric acid, fireworks and gunpowder. As it has a direct relation with national defence, this mineral has long been put under Government control. In Kiangsu a Government refinery is established at Tungshan, where the crude product is collected and purified.

Saltpeter is found in abundance in the fields, being the mixture of decayed organic matter and the potassium element in the soil. Collection is usually done in the early morning of autumn days when the mineral makes its appearance on the ground surface in the form of a thick layer of frost. The mineral thus collected, which is mixed with large quantities of dust and other impurities, is dissolved in a large proportion of water. The solution is then boiled in a caldron, black cotton-seed oil being added from time to time during the process. The mixture is stirred and the white foam on the surface removed. When the solution becomes sticky and turns into dark brown in color, it is left to be cooled down. The liquid, after precipitation, is poured into an earthernware basin to be crystallized. The crystal is slightly yellow in color and known as *maohsiao* (毛硝) or crude saltpeter, which is sold to the Government refinery at the price of $11 per 100 catties.

The process of refining may be briefly described as follows: The crystal is powdered and put into a bag to be constantly washed in clean water. After all impurities are removed, the powder is mixed with water and glue and boiled for the second time. To every 144 catties of crude saltpeter, 28½ catties of water and six *liang* of cow glue are added. The solution is first boiled over a gentle fire, and white foams on the surface must be removed from time to time. After the solution becomes clear, stronger fire is applied until the water content is evaporated. The liquid is then poured into a basin to be crystalized, and the white crystal thus formed is known as *hsiaoping* (硝餅) or pure saltpeter.

In 1932 the total amount of crude saltpeter produced in the various northern districts of the Province was 600,000 piculs, valued at $6,600,000. Thus, the amount of pure saltpeter is estimated at 300,000 piculs, valued at $18,000,000.

CHAPTER IV

STONE QUARRIES

KIANGSU, though not so mountainous as compared with other provinces, is also famous for its quarried stones. The most famous deposits are the white stone of Kaotze, granite of Wuhsien, small stone of Sungkiang, and building stone of Tungshan. A brief description of each of the quarries is as follows:—

WHITE STONE QUARRY AT KAOTZE

About five *li* from the village of Kaotze (高資), near Chinkiang, is a quarry at Hengshan (橫山), which yields a stone commonly taken for marble, owing to its white color, but quite different in composition and much less valuable. The quarry scattered over two hills, the Mantonshan (饅頭山) and Chilungshan(雞籠山), covering a total area of 60 *mou*.

The stone taken from this quarry is of two kinds, *liao-shih*, (料石), suitable for building purposes, and *luan shih* (亂石), or broken pieces.

This quarry is owned and operated by the villagers of Chin Chia Pien (金家邊), which has a population of 140 families, but only about 30 are engaged in quarrying. By an agreement between the villagers of the Chin Chia Pien and those of Liao Chia Pien (廖家邊), the *luan shih* is disposed of by the latter. Each worker can get an average wage of over $10 per month.

Formerly, the use of this white stone was limited to the construction of bridges, monuments and memorial arches, and the price was only about $8 per 10 cubic feet. As for *luan shih* it was of no marketable value, so the villagers of Chin Chia Pien contracted with the inhabitants, of Liao Chia Pien, giving them all the *luan shih* produced in the quarry provided only that it be quickly

carried away. Recently, however, since the introduction of rice-milling machinery and cement into this country, *luan shih* is in great demand for making concrete foundations, the annual sales far exceeding that of *liao shih*, and the inhabitants of Liao Chia Pien are now enjoying a much larger income from the quarry than the people of Chin Chia Pien.

There is no regular working organization among the 30 families of Chin Chia Pien operating the quarry. They regard stone-cutting as a secondary occupation, to be carried on when there is no other work to do. No machinery is employed in working the quarry, the only implements used being hammers and chisels, though blasting-powder is occasionally used. The quarry is in an exposed position, and during the rainy season is frequently covered by mud, which has to be cleared away before work can be resumed.

According to Mr. Chin Wan-shuan, a native of Chin Chia Pien and the leading figure in this trade, the quarry of *liao shih* amount to more than $10,000, at $18 per 10 feet. It is principally used in making lavatories, gate-posts, and monuments, while *luan shih* is sold to the amount of 30,000 piculs annually, at $14 per picul. Freight is included in the price, as the villagers have to deliver stone sold to the railway station at Kaotze.

Donkeys and wheelbarrows are the chief means of transporting stone from the quarry to the station, though *liao shih* of considerable size is carried by coolies to prevent breakage. Each wheelbarrow can carry 250 catties, while each donkey is able to carry 150 catties. They make four trips a day, and the cost is $0.055 for every 100 catties carried.

After the stone has been cut from the quarry, it is worked into various forms and sizes to meet different demands, while the *luan shih* is either further broken up into smaller pieces for making concrete or ground into powder for use in rice-milling.

The stone is mainly sold in the districts along the Nanking-Shanghai Railway. Gravels are sold at one dollar per 100 catties, and stone-powder bricks, four cents per piece.

GRANITE QUARRY AT WUHSIEN

Wuhsien granite is found abundantly in Chiaoshan (焦山), Chinshan (金山) and Hengshan (橫山). Granite from Chiaoshan is generally used for building purpose, that from Chinshan is chiefly in the form of gravels, which are chiefly shipped to Shanghai for road-building. The product from Hengshan is used for making stone mills. Wuhsien granite is very popular in cities along the Yangtse River, where the stone is extensively used in building *pailou*, tomb figures, etc. The quarries are worked by poor families, and annual output is unavailable.

SMALL STONE DEPOSITS OF SUNGKIANG AND TSINGPU

Small stones are found in abundance in the hills between Sungkiang and Tsingpu. The southern Tienma Hill (天馬山) covering an area of 26 *mou*, was worked in 1930, by an individual named Tsiang Er-chang (蔣爾昌), and the northern hill, 48 *mou* in area, was worked under the Sungkiang Industrial Society (松江實業社) in the same year. The deposits of Hsiaochipi hill (小赤壁), with an area of about 9 *mou*, Ershihtu (二十圖), covers 50 *mou*, and Wanghengshan Hill (王橫山), 47 *mou*, and in other hills like Hsiaokunshan (小崑山), Loshan (羅山) and Chenshan (辰山) are all worked either by private individuals or by industrial concerns. The stones obtained from these hills are chiefly used in Shanghai and cities along the Shanghai-Hangchow-Ningpo Railway for road-building purposes.

The total number of workers engaged in these seven hills is over 5,000, and the products are shipped to Shanghai by the Whangpoo River. Stones of big size are sold at $1.80 per ton, while those of small size sell at $3.20 per ton. The price of stone-powder is $2.50 per ton. The total output from these hills is 140,000 tons annually, valued at $300,000.

BUILDING STONE QUARRY AT TUNGSHAN

In addition to the coal and iron deposits, Tungshan is also rich in stone quarries. According to investigation conducted by the Ministry of Industry in 1932, over 400 families are engaged in stone-quarrying. With the rapid development of building enterprise in Shanghai and its environs a prosperous business has been done on this line, though difficulty in transportation has greatly handicapped its further growing. Other details are shown as follows:—

	Annual Quantity		Output Value
Rocks	160,000	cubic feet	$2,000
Slabs	2,200	pieces	220
Monument stones	500	„	1,750
Square stones	3,000	„	120
Stone troughs	200	„	3,000

CHAPTER V

SALT

KIANGSU heads the list of salt producing provinces in China. The salt districts in the Province are three in number, Huaipei (north of the Huai River) and Huainan (south of the Huai River), both under the administration of the Liang Huai Salt Bureau (兩淮鹽運使署), and Sungkiang, under the Liang Ché Salt Bureau (兩浙鹽運使署).

SALT FIELDS

In the three districts, there are 19 salt fields, of which 4 belong to the Huaipei District, 11 to Huainan District, and 4 to Sungkiang District.

The four salt fields in Huaipei District are Panpu (板浦) and Chungchen (中正), both of Kuanyun, Linghsing (臨興) of Kangyu, and Tsinan (濟南) of Liensui. The 11 salt fields in Huainan District are Lussu (呂四) and Yuchung (餘中), both in Nantung, Pinchio (掘角), Anliang (安梁), Tungho (東何), Tingchi (丁溪), and Chaoyen (草堰), all situated in Tungtai; Wuyu (伍佑) and Hsinhsing (新興) in Yencheng; Fengchu (豐掘) in Jukao; and Miaowan (廟灣) in Founing. The four salt fields in Sungkiang District are Liangpu (兩浦) in Chinshanwei (金山衛), Chinshan, Yuanpu (袁浦) in Sungkiang and Fenghsien; Tsungming (崇明) in the district of Tsungming; and Chintsun (青村) in Fenghsien.

PRODUCTION

As the method of manufacturing salt in these districts is different from each other, their output also differs widely. In Huaipei District salt is obtained by evaporating the brine by sunshine, and the total area of salt fields amounts to 390,170 *mou*. In Huainan District brine is heated in pans, which numbering 7,693 in total. While in Sungkiang

District, with the only exception of Tsungming field, where the heating method is followed, all other fields use the sun evaporation way and the brine being obtained from wells. The whole District has 13,831 brine wells, 11,940 salt storages and over 120,000 salt-drying boards.

The quality of Kiangsu salt, though inferior to the Szechuen product, is much better than that produced in Chekiang. The following table shows the average composition of salt produced in the three districts of the Province:—

	Sodium Chloride %	Water %	Other compounds %
Huaipei	89.29	6.10	4.61
Huainan	87.90	6.73	5.37
Sungkiang	89.60	5.19	5.21

The cost of production involved in different districts also varies. In Huaipei District, where evaporation method is used, the cost is from $1.37 to $1.88 per catty, while in Huainan District, where heating method is followed, one catty costs about $3.

As regards the annual output, the figures given by the Salt Administration Bureau are much less than the actual production, as 50 per cent of the production being smuggled to the market. The following table shows the annual production of salt in the Province during the last decade as supplied by the different salt Administration Bureaux:—

	Huaipei District (piculs)	Huainan District (piculs)	Sungkiang District (piculs)	Total (piculs)
1922	5,212,000	604,000	86,000	5,902,000
1923	7,291,000	1,145,000	126,000	8,562,000
1924	10,799,000	1,194,000	101,000	12,094,000
1925	8,008,000	1,158,000	136,000	9,302,000
1926	7,667,000	855,000	283,000	8,805,000
1927	6,993,000	1,105,000	194,000	8,292,000
1928	10,154,000	913,000	266,000	11,333,000
1929	10,507,000	359,000	256,000	11,122,000
1930	2,285,000	605,000	341,000	3,231,000
1931	4,011,000	574,000	251,000	4,836,000

In China salt industry has long been that of Government Monopoly. Thus the mode of transaction is different in that of other commodities. The following free translation of the regulations governing the marketing of the Kiangsu salt in Anhui and Kiangsi gives a brief idea of how this commodity is handled:—

Art. 1. Salt transactions should be done by the merchants themselves.

Art. 2. After being purchased the merchant pay to the Revenue Department of the Bank of China at Panpu (板浦) the correct amount of tax levied on the salt he has bought.

Art. 3. The merchant, after obtaining a duty-paid certificate from the Bank of China, shall secure another certificate which permits the transportation of salt from the nearest branch office of the Salt Bureau.

Art. 4. Before the issuance of the official permit, the branch office shall submit a note, together with the provisional permit, to the Salt Bureau for an official transport license.

Art. 5. The transport license, after being properly signed, shall be returned to the branch office, which at the same time shall notify the officer stationing at the salt fields to let pass of the salt.

Art. 6. The permit, together with the transport license, shall he returned to the merchant by the branch office.

Art. 7. The salt, before being shipped out from the fields, shall be examined by the officers upon submitting the permit by the merchant.

Art. 8. The packing and weighing of salt shall be taken care of by the merchant.

Art. 9. The loading of salt shall be carefully supervised by the officers in charge.

Art. 10. The cargo note shall be signed and issued by the officer stationing in the fields.

Art. 11. The boat is permitted to sail only after being carefully examined by the officers stationed in the various barriers.

Art. 12. No exactions whatsoever shall be collected by the barriers throughout the whole journey.

MARKETS

The distribution district is definitely designated by the Government. The salt destined for one district is not allowed to be sold in other district. The Hauipei salt is destined for 11 *hsien* in Northern Kiangsu, 6 *hsien* in Southern Shantung, 58 *hsien* in Eastern Hupeh, 27 *hsien* in Southern Anhui, 50 *hsien* in Kiangsi, 33 *hsien* in North-eastern Hunan, 14 *hsien* in Honan and 22 *hsien* in North and East Anhui. The markets for Huainan salt is 21 *hsien*, of which 20 are in Southern Kiangsu and one in Anhui. While 10 *hsien* in South-eastern Kiangsu are designated as the market for salt produced in Sungkiang District.

Salt is packed in different ways according to the various means of transportation. For water transportation salt is usually packed with rush sacks, each weighing from 105 to 163 catties, while those shipped by overland routes are packed in gunny bags each weighing 157 catties. The following table shows the amount (in piculs) of salt shipped out from the different districts during the past 11 years ending 1931:—

	Hsaipei District	Huainan District	Sungkiang District	Total
1921	2,471,000	5,062,000	1,009,000	8,542,000
1922	2,578,000	4,603,000	1,031,000	8,212,000
1923	2,425,000	4,447,000	1,081,000	7,953,000
1924	1,794,000	4,346,000	1,085,000	7,225,000
1925	2,759,000	5,153,000	975,000	8,887,000
1926	3,458,000	4,346,000	1,096,000	8,900,000
1927	1,362,000	5,494,000	1,070,000	7,926,000
1928	2,133,000	4,142,000	1,183,000	7,458,000
1929	1,986,000	3,940,000	1,218,000	7,144,000
1930	3,108,000	4,053,000	1,286,000	8,447,000
1931	2,668,000	3,922,000	1,342,000	7,932,000

CHAPTER VI

PHOSPHORUS

APATITE deposits of Kiangsu are found on the south side of Chu Shan (朐山), about 10 *li* south-west of Tunghai. At its west end, there is the Chaoho River (潮河), which runs down 18 *li* to a seaport, called Sinpuchen (新浦鎮). Steamships may be placed at anchor there at high tide.

The hill is composed of gneissic rocks of the Archaean system. It is partly of dome structure. Aside from the northern part, the rocks at the hillside belong to schists of a later age. The ore lies right underneath this schist series, measuring 155 meters in thickness. A fault occurs in the middle part of the mapped region. This accounts for the fact that the strata on the northwest side of the fault dip toward northeast, while those on the southeast side dip toward the south.

The phosphate ore is found together with the manganese ore. The former occurs as apatite Ca_5 (Cl, F) $(PO_4)_3$, while the latter occurs largely in the form of pyrolusite, MnO_2. The apatite is a replacement deposit, in which the ascending hot water has taken into solution a part of the limestone and has deposited in its place the mineral apatite, and the pyrolusite originates apparently from weathering of hornblende and augite in the schist series, with the resulting formation of manganese peroxide. In the course of time, this substance is dissolved in the underground water and redeposited in the present form.

Analysis of the best specimen found, the ore contains more than 49 per cent. of P_2O_5, which is comparable with the best ore produced in Canada. The commercial grade is said to contain 33 per cent,, according to the specification of the buyers.

The mining area is over 2,000 *mou*, and it is worked through two shafts, about seven *li* apart and connected by a light railway. Prior to 1925 the mine was worked by the Chin Ping Company (錦屏公司), but operations have since suspended owing to bad business. The output from 1920 to 1925 are shown below:—

	Tons.
1920	14,778.50
1921	16,077.80
1922	4,791.00
1923	4,521.00
1924	2,002.00
1925	1,230.00

The ore is shipped from the mine by a light railway to Chaoho River, whence the product is carried by sailing boats at a charge of one dollar per ton, to Tapu (大浦). From Tapu, where a special godown with a capacity of 700 tons is constructed, the ore is shipped to Japan by steamers. The cost of production is $8 per ton including transporting expenses, and the selling price is quoted at about 39 yen per ton.

CHAPTER VII

OTHER MINERAL DEPOSITS

OTHER mineral deposits of the Province not mentioned above may be briefly described as follows:—

Graphite of Chuyung.—Graphite deposit of Chuyung is distributed in Shiashu (下蜀), Tushan (土山) and Wukangshan (烏岡山). It has been worked by a group of merchants, and the annual output amounts to 20,000 piculs. The ore is chiefly shipped to Shanghai to be used for manufacturing pencils and dry cells.

Kaolin of Tanyang.—At Tanyang, kaolin is found in the northern part at Nishan (倪山) and Lungkang (隴岡), about 40 *li* from the city. The digging of this clay dates back over 100 years ago, when engaged by local farmers as a secondary occupation. At present it is worked by the Kaolin Mining Company, with a capital of $3,600. The total number of workers employed is 200 and produces 10,000 piculs of clay annually. Primitive method is used in digging, and the operatives receive 50 cents for every 400 catties of clay dug up.

The clay is chiefly sold in Wuchin, Wusih, and in districts of Chekiang Province. But recently a considerable amount is shipped to Shanghai and Japan for wine distilling purposes.

Kaolin of .Wuhsien.—Kaolin is also produced in Wuhsien at Yangshan (陽山) and Mituihshan (米堆山). The former hill is located 25 *li* south-west of the city and from the Hsushukuan (湑墅關) station, while the latter, 15 *li* south-west of the city and 8 *li* from the Hsushukuan station. The deposits of both hills are worked. Being of superior quality to that of Tanyang, the clay is mainly used for the manufacture of chinawares.

OTHER UNWORKED DEPOSITS

Aside from the mineral deposits mentioned above, Kiangsu has a number of other deposits which are either unworked or suspended. They are as follows:—

Crystal Deposit in Tunghai.—Crystal of Tunghai has been known for a long time, but owing to the remoteness of the place and the conservativeness of the people, it has not been worked.

Silica Deposit of Suchien.—This deposit was once worked but is suspended at present.

Limestone.—Limestone is found elsewhere in the Province, but lime manufacturing is concentrated only in three places, namely, Lungtan (龍潭), where the deposits is used by the China Cement Company (中國水泥公司) Changchu (張渚) in Ihsing, and on Tungtingshan (洞庭山).

Copper Deposit in Kiangning.—In Kiangning copper chloride and copper carbonate deposits are found respectively at Tingling (定林) and Motsushan (磨子山). Work has not yet started.

Lead Deposits in Kiangning.—In addition to copper deposit, lead deposits are also found at Yienkungmiao (宴公廟). Although it has been conceded, work has not yet been started.

Galena Deposit in Lishui.—In 1926 a galena deposit was found in Lishui by the Geological Institute. The ore is said to contain silver, but details are unavailable.

Placer Gold in Tunghai.—In Yushan (羽山), Tunghai, placer gold is found in the surrounding streams.

Kaolin.—This mineral is found in the districts of Luho and Kiangyin. It is suitable for manufacturing chinawares of inferior grades.

BOOK EIGHT

MANUFACTURING INDUSTRIES

CHAPTER I

COTTON INDUSTRY

KIANGSU Province is one of the great producing centers of cotton. There is in this Province a total area of over two and a half million *mou* of land devoted to the cultivation of this important crop. Besides being a producing center, it is also the most important center of cotton industry of the country, with 48 spinning and 231 weaving mills within the Provincial boundary. The following pages are a general survey of the cotton industry in the Province.

GINNING

Iron gins were not used until the last quarter of the nineteenth century, when the machine was first imported from Japan. Wooden presses, which had been extensively used to remove seeds from raw cotton, were gradually displaced by the more efficient imported gins. The fact, however, that the newly introduced machines were much more expensive made it impossible to reach the average farmer, and consequently, it has given rise to the need of establishing numerous gin houses.

The Lee Woo Cotton Ginning Mill (禮和花廠) is the first of its kind established in Shanghai, followed subsequently by a number of other concerns, such as the Yung Mou (永茂), the Yih Tai (益泰), the Tung Hsin (東信) the Yung Lung (雲龍), etc., the last two mentioned being Japanese enterprises. In the interior, the Cheng Heng Chang (程恆昌) at Fenghsien is the most famous, having a capital of $200,000.

The ginning industry enjoyed a very high prosperity during the time of the World War, when all the cotton mills in the Province did extremely good business. After the War, however, in consequence of a general depression of the spinning industry, many gin houses were either reorganized or closed down.

There are at present in Kiangsu 35 Chinese owned ginning mills, of which 16 are in Shanghai, five in Nanhui, and two each in Fenghsien, Paoshan, and Taitsang, and the remaining two in Chinshan and Wuchin. Details are shown as follows:

	Location	Established	Capital	No. of Operatives	No. of Gins	Source of Power	Annual Consumption of Raw Cotton (piculs)
Lee Woo (禮和)	Shanghai	1910	₹ 48,000	176	100	Motor	100,000
Heng Feng Ho Chi (恆豐和記)	„	1920	10,000	29	20	Diesel engine	20,000
Heng Yuan Hsing Chi ..... (恆源興記)	„	1924	20,000	180	160	Motor & gas engines	172,000
Heng Hsing (恆興)	„	1929	$ 9,000	19	14	Engine	8,000
Heng Yuan Fu (恆源福)	„	1930	₹ 5,000	27	20	„	10,800
Chung Chi (仲記)	„	1932	$ 5,000	7	20	„	14,500
Teh Feng Hsing Chi (德豐興記)	„	1932	₹ 20,000	85	70	„	77,000
Chang Hsin Ho Jen Chi ..... (張信和仁記)	„	——	$ 10,000	14	16	Diesel engine	17,600
Ku Tien Sheng (顧天盛)	„	——	——	85	27	Motor	29,000
Yuan Hsing Te (源興德)	„	1918	₹ 30,000	130	41	Engine	50,000
Hua Feng (華豐)	„	1929	3,000	10	10	„	6,400
Hsieh Tai (協泰)	„	1925	$ 15,000	40	28	„	31,000

Hsieh Hsing (協興)	〃	1923	5,000	5	4	〃	2,000
Hsieh Lung (協隆)	〃	1928	5,000	5	4	〃	2,200
Huang Yung Shen (黃永順) ..	〃	1921	1,000	3	3	〃	1,100
Hsiang Shun (祥順)	〃	1922	1,000	3	3	〃	1,200
Kung Ho (公和)	Nanhui	1928	9,000	29	20	〃	17,000
Heng Ta (恒大)	〃	1923	7,000	30	20	〃	15,000
Ho Hsing Chang (合興昌)	〃	1918	26,000	36	24	〃	12,000
Ho Hsing (合興)	〃	1921	4,000	16	16	〃	6,000
Wang Hsieh Hsing (王協興) ..	〃	1931	3,000	9	9	〃	600
Chen Hsing (振興)	〃	1926	2,000	—	8	〃	3,000
Hsieh Chi (協記)	Chuansha	1917	7,000	56	36	〃	21,000
Yung Hsing (永興)	〃	1926	9,000	27	20	〃	12,900
Tang Yuan Hsing (唐源興) ..	〃	1920	10,000	38	30	〃	25,900
Ta Tung (大東)	〃	1926	8,000	20	18	〃	11,600
Ku Hsieh Tai (顧協泰)	〃	1920	15,000	38	28	〃	24,000
Chin Chang Chung Chi ..... (晉昌仲記)	Paoshan	1923	3,000	26	20	Diesel engine	3,000
Yu Feng (豫豐)	〃	1925	2,000	17	12	〃 〃	2,500
Teh Chang (德昌)	Taitsang	1923	5,000	5	20	〃 〃	15,000
Ta Chang Ho (大昌和)	〃	1931	20,000	6	20	〃 〃	15,000
Cheng Heng Chang (程恒昌) ..	Fenghsien	1875	200,000	200	100	〃 〃	110,000
Ting Ho Tai (鼎和泰)	〃	1917	5,000	130	90	Engine	18,000
Hsia Chi (洽記)	Chinshan	1926	1,000	7	4	〃	1,200
Ko Hsiang Chi (戈祥記)	Wuchin	——	30,000	70	30	〃	32,400

The total number of operatives employed in the 35 mills runs to over 1,500, of whom 30 per cent are males and 70 per cent females. As a rule, male hands are paid monthly seven or eight dollars, with free board and lodging. An average female worker earns about 20 cents a day.

Raw cotton used in the different mills comes mainly from Shanghai, Nanhui, Chuansha, Paoshan, Taitsang, Fenghsien, Chinshan, Sungkiang, etc. Although many other districts in the Province grow considerable amount of cotton, it is mostly absorbed by local cotton mills. Thus, cotton produced in Chitung, Haimen, Nantung, Jukao, Tungtai, Hsinghua, Yencheng goes mainly to the Ta Shen Cotton Mill, which owns three plants and consumes a total of 600,000 piculs of cotton a year. In addition there are also many purchasing agencies, which operate in these districts every autumn on behalf of Shanghai cotton mills. In Kiangyin, Changshu, Kiating, etc., very little raw cotton is obtainable by the ginning mills owing to the existence of the Shen Hsin Cotton Mill (申新紗廠), No. 3, the Yu Kong Textile Manufacturing Co. (豫康紡織公司), the Kuang Ching Textile Manufacturing Co. (廣勤紡織公司), the Chen Sing Textile Manufacturing Co. (振新紡織公司) and the Yeh Ching Cotton Mill (業勤紡織公司) in Wusih, the Tung Cheng Cotton Mill (通成紡織公司), the Fu Ta Cotton Mill (福大紗廠), etc. in Wuchin, the Li Yun Textile Manufacturing Co. (利用紡織公司) in Kiangyin, and the Su Lun Cotton Mill (蘇綸紗廠) in Wuhsien.

The annual consumption of raw cotton by the various ginning mills in the Province amounts in total to approximately 889,000 piculs. In average, every gin is capable of removing seeds from 40 catties of cotton per hour. Most of the mills operate only about seven months a year, namely, February, March, April, September, October, November and December.

The quantity of ginned cotton obtainable from seed cotton varies with different growths. The table below shows the number of catties of ginned cotton which may be usually obtained from every 100 catties of seed cotton grown in Fenghsien, Chuansha, Pootung, Nanhui, etc.

Fenghsien	35
Chuansha	36
Pootung	36.50
Minghong	36.50
Nanhui	36
Paoshan	37
Taitsang	39

The quality of the machine-ginned cotton depends mainly on the variety of raw cotton used. Generally speaking, the product from Nanhui, Haimen, Changshu, and Kiangyin is the best, having long staple of about 1.20 inches. The staple length of cotton from Jukao, Taitsang, Tsingkiang, Yencheng, Founing, and Kiangtu varies from eight-tenths to nine-tenths of an inch. Taitsang, Minghong, Pootung, Peisingching (北新涇) and Chuansha cotton has the shortest staple, ranging from seven-tenths to eight-tenths of an inch in length.

Seed cotton used in the ginning mills is usually purchased from farmers, who bring their product to the mills for sale. Purchasing agents are also sent to the growing districts whenever necessary. The products collected are shipped to the mills in piculs or bales, the agents being held responsible for the weight of the contents:

SPINNINNG

Kiangsu leads among other provinces of China in cotton spinning industry. According to recent investigation there are 84 Chinese cotton mills throughout the country, of which Kiangsu province claims 48. The number of Japanese cotton mills in China totals 41 and 30 of them are found in Shanghai. There are also three British cotton mills under operation. This is sufficient to show the importance of the Province in China's cotton industry. The following table substantiates the fact:—

	Mills	Workers	Spindle	Yarn Output (in Bales)
Shanghai	28	65,146	1,066,920	600,440
Kiangsu (Excluding Shanghai)	20	40,200	513,824	313,710
Total (Kiangsu)	48	105,346	1,580,744	914,150
Total (China)	84	173,687	2,589,040	1,427,919
Percentage (Kiangsu's Share in China Cotton Industry)	58	60	61	64

Kiangsu ranks first in number of mills, workers, spindles and output, representing over 50 per cent of China's total cotton business while Shanghai, owing to its favorable and convenient geographical position, claims the lion's share in the Province.

HISTORY

The beginning of cotton mills in Kiangsu Province dates back to the year of Kwang Hsu (1890) when Lord Li Hung Chang (李鴻章), a great statesman of world-wide repute, started a Machine Weaving Factory (機器織布廠) known as Yang Pu Chu (洋布局) at Yangtszepoo, Shanghai. This factory, unfortunately, was short-lived, being reduced to ashes in 1892 shortly after its organization. Acting on the instructions given by Lord Li, Sheng Hsuan Huai (盛宣懷) restored the plant in 1893. Henceforth, the factory had been owned and managed by private interests under the name of Hua Sheng (華盛) until it was turned into a semi-government enterprise, called the Heng Feng Cotton Mill (恆豐紗廠). In 1895 Yang Ou Fang (楊藕舫) started the Yeh Chin Cotton Mill (業勤) in Wusih and this was the first of its kind ever established in the interior of China, and in the following year the Su Lun Mill (蘇綸) was put into operation in Wuhsien, and three years afterwards in 1899 the Sun Dah Mill (生大) also came into business at Nantung.

One of the difficulties encountered by Chinese mill owners at beginning was the competition with foreigners, and this became more noticeable after the conclusion of Sino-Japanese War in 1895. Concessions obtained by treaties for foreign interests to carry out manufacturing business in China were immediately taken advantage of and the following concerns entered into business operation in the same year; Jui Chi Cotton Mill (瑞記, German owned) Hung Yuan Cotton Mill (鴻源, American owned), Ewo Cotton Mill (怡和, British owned), Lao Kung Mao (老公茂, British owned) and the Tokwa Boseki Kaisha, (東華紡績株式會社, Japanese owned). Moreover, in 1902 the Ta Shun Cotton Mill (大純, Chinese owned) was liquidated and was sold to Japanese interest. For a

period of 14 years from 1890 to 1904 Chinese cotton industry was insignificant due to severe foreign competition as well as to poor management.

After the conclusion of the Russo-Japanese War in 1905 there was a keen demand for cotton in China, resulting in the establishing of several new mills. It is estimated that during the period of 9 years from 1905 to 1914 Chinese owned cotton mills established and operated were: Chen Hua (振華), Chiu Cheng (九成), Tung Tung Chang (同昌), Teh Ta (德大), in Shanghai; Chen Hsing (振興) in Wusih; Yu Tai (豫泰) in Changshu; Tsi Tai (濟泰) in Taitsang and Li Yung (利用) in Kiangyin, while foreign firms including Kung Yi (公益) and Yangtszepoo (楊樹浦), both British, and Naigai Wata Kaisha, Ltd., Nos. 3, 4 and 5 (內外紗廠株式會社, Japanese owned) also came into existence.

The period from 1919 to 1924 was the golden era for Chinese mills as the termination of the European War left the world in turmoil. The nations, hitherto supplying China with cotton yarn and piece goods, found themselves in difficulties of adjusting themselves to normal conditions. This offered China a great opportunity of producing her own cotton goods at cheaper price and in order to meet the keen demand by mills in the Province, particularly at Shanghai. It is estimated that during this period new cotton mills (Chinese owned) established at Shanghai were over 10 in number, with the Shen Hsin (申新) leading in prominence and in Wusih the Kuang Chin (廣勤) and Kuang Feng (廣豐). Japanese competition was still under full swing and it is estimated that during the same period there were over 20 Japanese mills in operation.

From 1924 up to present the number of Chinese owned mills showed further increase. In Shanghai during this period the Pao Hsing Mill (寶興) and the Shen Hsin Mill No. 8 were established and in Wuchin two mills under the name of Fu Ta (福大) and Tung Chen (通成) also came into existence. During this period most of the Chinese owned old mills were reorganized for the purpose of general improvement and among those under reorganization were Shen Hsin Mill Nos. 5, 7 and 8, Chen Hua

(振華), Wing On (永安) and Yung Yu (永豫) of Shanghai, Yeh Chin of Wusih, Heng Feng (恆豐) and Ta Chen (大成) of Wuchin, Li Tai (利泰) of Taitsang, Yu Tai (豫泰) of Changshu, and Su Lun of Wuhsien. The Pao Chen Mill (寶成), after being taken over by Japanese, was re-named into the Japan-China Spinning and Weaving Company Nos. 5, 6, and 7 (日華紡織株式會社), while the Lao Kung Mao Cotton Mill (老公茂), a British firm, is now operated by Japanese under the name of Kung Dah Cotton Mill (公大紗廠).

Though during recent years the cotton industry in Kiangsu has gone through many disturbing experiences, and had to face the keen competition of foreign mills equipped with higher technical and financial resources and enjoying treaty privileges, the progress made by Chinese industrialists is gratifying. According to investigations made recently, there are 84 Chinese cotton-mills in the country, of which 48 are in Kiangsu. There are also 41 Japanese mills in the Province, of which 30 are established in Shanghai, where three British mills are also operating. The following table, compiled from reports prepared by the Chinese Cotton Millowners' Association, shows the progress made in the cotton spinning industry in the Province during the last 14 years:

NUMBER OF COTTON-MILLS OPERATING

	1919	1920	1921	1922	1924	1925	1927	1928	1930	1931	1932
Shanghai	11	21	22	24	24	22	24	24	28	28	28
Wusih	3	6	6	6	6	6	6	6	6	6	7
Nantung	1	2	4	4	3	3	2	2	2	2	2
Wuchin	0	2	3	3	3	3	4	4	4	4	4
Tsungming	1	3	2	2	2	2	2	2	1	1	1
Wuhsien	1	1	1	1	1	1	1	1	1	1	1
Taitsang	1	1	1	1	1	1	1	1	1	1	1
Changshu	1	1	1	1	1	1	1	1	1	1	1
Kiangyin	1	1	1	1	1	1	1	1	1	1	1
Haimen	0	1	1	1	1	1	1	1	1	1	1
Jukao	0	0	1	2	1	0	0	0	0	0	0
Tungtai	0	0	1	1	0	0	0	0	0	0	0
Yencheng	0	0	1	1	0	0	0	0	0	0	0
Chitung	0	0	0	0	0	0	0	0	1	1	1
Total	20	39	45	48	44	41	43	43	47	47	48

This progress is shown more clearly by the increasing number of spindles operating during the same years:

	Yarn Spindles	Thread Spindles
1919	889,032	—
1920	1,064,000	—
1921	779,270	—
1922	1,337,822	—
1924	1,210,001	45,478
1925	1,108,206	43,376
1927	1,145,908	49,546
1928	1,209,884	49,428
1930	1,368,794	50,008
1931	1,413,074	80,548
1932	1,580,744	110,544

Shanghai is the center of the cotton spinning industry in Kiangsu Province, with 28 mills out of a total of 48, and 1,066,920 spindles out of a total of 1,580,744. Output, too, represents two-thirds—600,400 bales—of the total for the entire Province, which is 914,150 bales, and nearly half the production of the whole country, 1,427,919.

DETAILS OF OPERATION

	No. of Mills	Total Capital	No. of Yarn Spindles	No. of Workers	Annual Output (Bales of Yarn)
Shanghai	28	$51,363,000	1,066,920	65,146	600,440
Wusih	7	9,710,000	198,168	14,103	111,161
Wuchin	5	2,080,000	46,504	3,611	16,703
Nantung	2	₮ 2,500,000	92,104	8,469	70,664
Wuhsien	1	$ 600,000	42,568	3,103	23,820
Changshu	1	₮ 400,000	12,740	963	7,600
Taitsang	1	100,000	25,000	1,534	16,800
Kiangyin	1	₮ 720,000	15,000	1,300	9,200
Tsungming	1	$ 960,000	16,400	1,140	11,320
Chitung	1	₮1,400,000	35,000	3,400	18,880
Haimen	1	$ 3,000,000	30,340	2,550	27,562
Total	49	$77,168,480	1,580,744	106,346	914,150

CAPITAL

The total capital of all the mills in the Province amounts to $77,168,480 (capital in taels being converted into dollars at 0.73, the rate prevailing at the time of investigation). Thus the average capital for each mill is in the neighborhood of $1,500,000 which is actually only one-third of the average capital of Japanese mills. The distribution of capital is shown in the following table:

	No. of mills	Total capital
Under $500,000	7	$ 1,902,328
$500,001-$600,000	1	530,000
$600,001-$700,000	5	3,387,737
$700,001-$800,000	—	—
$800,001-$900,000	1	821,918
$900,001-$1,000,000	6	5,946,301
$1,000,001-$2,000,000	11	17,193,151
$2,000,001-$3,000,000	6	14,219,176
$3,000,001-$4,000,000	1	8,424,658
$4,000,001-$5,000,000	1	4,109,589
$5,000,001-$10,000,000	—	—
Over $10,000,001	1	12,000,000
Total	40*	$63,534,858

From the above table it is seen that mills having a capital of from one to three million dollars are the most common. In this connection we should also note that most of the capital of a cotton mill is invested in machinery, and leaving only a very small portion used as liquid capital. Of the 49 mills, only 11 mills having reserve funds, which range from a few tens of thousand dollars to Tls. 470,000. As to the nature of organization, practically all the mills are organized in the form of limited liability corporations, and none of them are found in private ownership or partnership basis.

*This number does not agree with the total number of mills because in some mills under a single proprietorship no separate capital for each mill is recorded.

SPINDLES

The total number of spindles operating in the Province is 1,580,744, distributed as follows:

	No. of Mills	Number of Yarn Spindles	No. of Mills	Number of Thread Spindles
1,001-5,000	1	4,736	10	21,728
5,001-6,000	3	16,860	1	5,300
6,001-7,000	—	——	1	6,400
7,001-8,000	—	——	1	7,228
8,001-9,000	1	9,000	1	8,600
9,001-10,000	—	——	—	——
10,001-20,000	13	188,472	3	40,332
20,001-30,000	10	250,728	1	20,956
30,001-40,000	6	199,856	—	——
40,001-50,000	2	89,216	—	——
50,001-60,000	3	216,388	—	——
60,001-70,000	3	193,668	—	——
70,001-80,000	3	218,728	—	——
80,001-90,000	1	80,556	—	——
90,001-100,000	—	——	—	——
Over 100,000	1	112,536	—	——
Total	48	1,580,744	18	110,544

From the above table it will be seen that most of the mills are equipped with from 10,001 to 30,000 spindles, while the Japanese mills in Shanghai are mostly equipped with over 30,000 spindles. Of the 18 mills equipped with thread spindles, 11 are located at Shanghai. The total number of looms is 13,627, owned by 20 mills, of which the Wing On Mills in Shanghai are equipped with 228 automatic looms.

The spindles used by the mills are mostly imported from Great Britain and the United States. Those used by the Shanghai mills are chiefly the products of Saco Lowell of the United States, with Asa Lees and Howard and Bullough, both British makes, next in importance. The spindles used by the Yeh Chin Mill of Wusih and Ta Chen Mill of Wuchin are mainly of the Dobson make of Great Britain. Distribution of different makes of spindles used by the mills in Shanghai, Wusih and Wuchin is as follows:

	No. of Mills.
Saco Lowell (U.S.)	12
Dobson (British)	4
Herthington & Sons (British)	5
Asa Lees (British)	4
Howard and Bullough (British)	6
Brooks and Doxey (British)	3

Looms are chiefly imported from Japan, with the products of Toyoda (豐田) Factory being the most popular. In some mills, Chinese made looms are also used, to which the products of the China Iron Works (中國鐵工廠), the Ho Chung Iron Works (合衆鐵工廠), and the Ta Lung Iron Works (大隆鐵工廠) are most widely used.

WORKERS

Cotton mill workers in Kiangsu are numbered at 105,346, of which 65 per cent represents workers in Shanghai, 14 per cent in Wusih, 4 per cent in Wuchin, and 17 per cent are workers in various industrial centres in Kiangsu. According to the investigation made by the Bureau of Social Affairs of the Municipality of Greater Shanghai, 20.8 per cent of operatives in Shanghai are males, 76 per cent females and 3.2 per cent children, while in Wusih male workers constitute 20 per cent, female, 76 per cent, and juvenile, 4 per cent, and in Wuchin, female workers form 84 per cent and male workers 15 per cent. Workers in Shanghai are mainly from the suburbs of Shanghai and districts in North Kiangsu, whereas in Wuchin, from 80 to 90 per cent of the workers are natives of the city and only from 10 to 20 per cent are outsiders, but in Wusih 70 per cent are natives of the district with the remainder coming largely from Yencheng, Luho and Tungtai.

The distribution of the number of workers in various mills is as follows:

	No. of Mills	Total No. of Workers
Under 500	1	400
501-600	—	——
601-700	—	——
701-800	5	3,788
801-900	2	1,722
901-1,000	2	1,883

1,001-2,000	15	21,572
2,001-3,000	10	24,571
3,001-4,000	7	24,897
4,001-5,000	2	8,823
5,001-6,000	2	10,700
6,001-7,000	1	7,000
Over 7,000	—	—
Unknown	1	—
Total	48	105,346

There are 25 mills, or over 50 per cent of the total, employing between 1,001 and 3,000 workers. The total number of workers employed by these 25 mills is 34,164, or 32 per cent of the total.

The scale of wages received by workers is differed in different localities. The following table shows the average daily wages received by workers in Shanghai, Wusih and Wuchin:

	Male	Female	Child
Shanghai	$0.552	$0.452	$0.300
Wusih	0.470	0.370	0.270
Wuchin	0.30–1.30	0.25–0.85	0.20–0.30

Wages received by the workers are also different according to the different lines of work they attend. The following table shows the daily wage received by workers in a certain cotton mill in Shanghai:

	Highest	Lowest	Average
Cotton sorting Dept.	$0.75	$0.28	$0.413
1st Spinning Dept.	1.26	0.25	0.473
2nd Spinning Dept.	0.90	0.25	0.494
Yarn Reeling Dept.	0.80	0.25	0.404
Packing Dept.	1.49	0.28	0.692
Storage Dept.	1.42	0.35	0.535
Average	1.19	0.25	0.473

The following table shows the details of various mills in Kiangsu in regard to their name, address, time of establishment, capital, reserve, number of yarn and thread spindles, looms, motive power, and number of hands employed:—

Name of Mills ● In Suspension ▲ Not Yet Opened ※ With Foreign Investment	Mill Address	Establishment ▲Date of Renting, Purchase, or Reorganisation	Capital	Reserve	Spindles Operating ▲ Newly Added ● Suspended Yarn	Thread	Looms Operating ▲ Newly Added ● Suspended	Generating Power (Electricity: Kilowatt. Steam: Horse Power)		No. of Workers
Heng Feng Textile Mfg. Co. (恆豐紡織新局)	1—6 Whashing Rd., Shanghai	1890	₹ 1,080,000	₹310,000	55,152		612	Ele.	1,800	3,095
Chen Hwa Lee Kee Cotton Mfg. Co. Ltd. (振華利記紡織股份有限公司)	4 Lay Road, Shanghai	1907 ▲1927	300,000		13,548			,,	350	720
Shen Hsin Cotton Mill No. 1 (申新第一紡織廠)	Chow Chia Chiao, Brenan Rd., S'hai	1916	$ 3,000,000		45,328 ▲ 25,000		1,111 ▲ 500	,,	3,370	4,705
Shen Hsin Cotton Mill No. 2 (申新第二紡織廠)	2 Ichang Road, Shanghai	1907 ▲1918	₹ 500,000		40,200 ▲ 14,352	5,040 ▲ 3,560		,,	1,300	2,550
Shen Hsin Cotton Mill No. 5 (申新第五紡織廠)	Ward Road, Shanghai	1914 ▲1925	1,300,000		46,648	13,932 ▲ 2,100		,,	1,336	2,482
Shen Hsin Cotton Mill No. 6 (申新第六紡織廠)	Lay Road, Yangtszepoo, S'hai	1918 ▲1931	$ 1,000,000		73,080	2,016	920	,,	2,750	3,630
Shen Hsin Cotton Mill No. 7 (申新第七紡織廠)	468 Yangtszepoo Road, Shanghai	1896 ▲1929			51,244 ▲ 5,040	13,410	419	,,	1,600	2,719
Shen Hsin Cotton Mill No. 8 (申新第八紡織廠)	Chen Chia Tu, Brenan Rd., S'hai	1930	2,000,000		42,400 ▲ 8 000			,,	1,550	2,100
Shen Hsin Cotton Mill No. 9 (申新第九紡織廠)	1690 Yangtszepoo Road, Shanghai	1913 ▲1931			72 156 ▲ 8,400	10,800	900	,, Steam	2,050 1,650	5,200
Pu Yi Spinning & Weaving Co., Mill No. 1 (溥益紡織公司第一廠)	37 West Soochow Road, Shanghai	1918			25,600	1,200		Ele.	700	1,443
Pu Yi Spinning & Weaving Co., Mill No. 2 (溥益紡織公司第二廠)	8 Robinson Road, Shanghai	1924			24,920		504	,,	900	2,095
Wei Tung Ho Kee Textile Mfg. Co. Ltd. (緯通合記紡織股份有限公司)	Yangtszepoo Rd, Pinliang Road, Shanghai	1921 1931	1,200,000		27,648			,,	800	1,696

Tung Yi Spinning & Weaving Co. Ltd. (統益紡織公司)	10 Mokanshan Rd., Shanghai	1920	₹ 1,500,000		65,852	7,228		„	2,100	3,574
Heng Dah Sing Kee Cotton Mill (恒大新記紗廠)	Yang Shih Chiao, Pootung, S'hai	1921 ▲1930			15,552			„	700	920
Wing On Textile & Mfg. Co. Mill No. 1 (永安紡織有限公司第一廠)	Lay Road, Yangtszepoo, S'hai	1923			38,160		1,070 228(Auto)	„	2,000	3,318
Wing On Textile & Mfg. Co. Mill No. 2 (永安紡織有限公司第二廠)	Wentsaopang. Woosung	1921 ▲1924	$12,000,000		112,536	11,756 ▲ 9,200		„	3,000	5,500
Wing On Textile & Mfg. Co. Mill No. 3 (永安紡織有限公司第三廠)	55 Markham Rd., Shanghai.	1916 ▲1928			62,816		240	„	1,890	3,800
Dah Feng Chin Kee Textile Mfg. Co. Ltd. (大豐慶記紡織股份有限公司)	Tuntzewan, Soochow Creek S'hai	1923	₹ 1,500,000	360,000	29,952		224	„	1,260	2,700
Cheng Tai Textile Mfg. Co. Ltd. (振泰紡織股份有限公司)	West of Brenan Piece, Shanghai	1921	$ 1,000,000	$ 68,000 ▲	24,700 800	5,300	440	„	950	1,479
Hung Chang Spinning, Weaving & Dyeing Co. (鴻章紡織染廠)	63 Markham Road, Shanghai.	1921	₹ 1,500,000		20,568	3,200 ▲	216 120	„	1,000	1,052
Tung Chang Sheh Kee Cotton Mill (同昌協記紗廠)	Chee Tsang Kai Nantao, S'hai	1908 ▲1931	100,000		11,500			Steam	350	708
Yung Yu Ho Kee Textile Mfg. Co. Ltd. (永豫和記紡織股份有限公司)	Kwang Fu Road, Chapei, S'hai	1921 ▲1928	500,000		28,000			„	1,000	2,760
Tsung Sin Textile Mfg. Co. Ltd. (崇信紡織有限公司)	No. 1 Tang Chia Du, Shanghai	1921	₹ 1,500,000	₹470,000	34,000			„	1,200	2,300
Lung Mon Textile Mfg. Co. Ltd. (隆茂紡織有限公司)	Ward Rd., Corner Linching Road, Shanghai	▲1929	250,000		12,672			Ele.	390	750
Pao Hsing Cotton Mill (寶興紡織公司)	Kochiaza, PaoShan Hsien	1929	500,000		12,240		▲ 200	Steam	700	900

Hsieh Feng Yi Kee Cotton Mill (協豐益記紗廠)	223 Penang Road, Shanghai	1930	$	200,000		4,736	1,448		Ele.	380	400
Ming Shun Textile Mfg. Co. Ltd.(民生紡織股份有限公司)	Warren Rd., S'hai	1922	₹	500,000	30,000	9,000		▲ 130	„	500	800
King Wei Ming Kee Cotton Mill (經緯明記紡織廠)	Yochow Rd., Corner Kungping Road, Shanghai	1922 ▲1931		200,000		5,120			„	350	800
Total Above in the Municipality of Greater Shanghai : 28 Mills						1,006,920	90,280	7,804	—		65,146
Ta Shen Cotton Mill No. 1 A (大生第一紡織公司)	Tang Chia Za, Nantung	1899	₹	2,500,000		75,380	2,000	725	Steam Ele.	2,200 200	7,000
Ta Shen Cotton Mill No. 1 B (大生第一紡織公司副廠)	Kiang Chia Chiao, Outside of South Gate, Nantung	1924				16,724		▲ 240	„	750	1,400
Ta Shen Cotton Mill No. 2 (大生第二紡織公司)	South of Kiu Lung Village, Chitung	1907		1,400,000	₹ 180,000	35,000		200 ▲ 40	Steam	1,200	3,400
Ta Shen Cotton Mill No. 3 (大生第三紡織公司)	Nanwan, Chang Loh Village, Haimen	1921		3,000,000	30,000	30,340	1,200	594	„	1,000	2,550
Ta Tung Cotton Mill (大通紡織公司)	Nanpao Village, Tsungming	1922	$	960,000	41,000	16,400			„ Ele.	450 270	1,110
Yieh Ching Cotton Mill (業勤紗廠)	Shing Lung Chiao Outside of East Gate, Wusih	1896 ▲1929		210,000		13,832			Steam	400	1,100
Chen Sing Textile Mfg. Co. Ltd.(振新紡織股份有限公司)	Ta Pao Tang, Outside of West Gate, Wusih	1905		1,000,000	$270,000	30,296		▲ 250	Ele.	2,500	1,720
Kwang Ching Textile Mfg. Co. Ltd. (廣勤紡織股份有限公司)	Chang Yuan Bridge, Kwang Cheng Road, Wusih	1917		1,500,000		23,040	1,440	72	Steam	270	1,960
King Feng Textile Mfg. Co. Ltd.(慶豐紡織股份有限公司)	Chow San Pang, Kwang Cheng Road, Wusih	1921		1,800,000	100,000	32,000	1,504	420	Ele.	2,600	2,315

Yu Kong Textile Mfg. Co. Ltd.(裕康紡織股份有限公司)	Li Hwa Chiang Wusih	1921	$	1,200,000			17,600			Steam	500	1,270
Shen Sing Cotton Mill No. 3 (申新第三紡織廠)	Outside of West Gate, Wusih	1921		3,000,000			65,000		872 ▲ 600	Elc.	7,200	4,118
Li Sing Spinning Weaving, & Dyeing Co. (厘新紡織漂染整理公司)	Li Sin Rd., Wusih	1931		1,000,000		▲	10,000 6,400	6,000 ▲ 400	700	,,	1,000	1,620
Su Lun Cotton Mill (蘇綸紡織廠)	Yu Tang Bridge, Outside of Pan Men, Wuhsien	1896 ▲1928	₹	600,000			42,568	2,020	420	Steam Ele.	1,485 220	3,130
Fu Shun Spinning & Weaving Co. (復順紡織公司)	Tse Tang, Changchu	1905 ▲1929	▲$	400,000 150,000			12,740			Steam	400	963
Li Tai Textile Mfg. Co. Ltd. (利泰紡織股份有限公司)	Sha Chi Village, Taichang	1905 ▲1927	$	1,000,000	16,741		25,000			,,	750	1,534
Ming Feng Textile Mfg. Co. Ltd.(民豐紗廠股份有限公司)	Outside of Small South Gate, Changchow	1921 ▲1931		530,000			14,264			Ele.	590	1,085
Ta Cheng Spinning, Weaving, & Dyeing Co. (Nos. 1 & 2) 大成紡織染廠一二廠	Ten An Street, Outside of Great South Gate, Beh Chia Chiao, Outside of East Gate, Changchow	1921 ▲1930		1,400,000		▲	10,000 10,500	▲ 4,800	440 ▲ 140	Steam Ele.	590 199	1,704
Li Yuh Textile Mfg. Co. Ltd. (利用紡織有限公司)	Za Si Pao, Outside of North Gate, Kiangyin	1908	₹	720,000			15,000			Steam	500	1,300
Fu Dah Cotton Mill ● (福大紡織公司)	Outside of East Gate, Changchow	1929	$	150,000		▲	3,200 2,800			Ele.	152	
Tung Cheng Cotton Mill (通成紡織公司)	Tsi-Shi-en, Changchow	1925	₹	280,000			5,740		50	,, Steam	369 30	822
Total Above in Kiangsu Province : 21 Mills							513,824	20,201	5,763			40,200

SUPPLY AND CONSUMPTION OF RAW COTTON

According to the 1932 report issued by the Chinese Cotton Mill-owners' Association, the amount of raw cotton consumed by the Chinese mills in the Province is as follows:

Shanghai mills	2,191,550	piculs
Kiangsu mills (excluding Shanghai) ..	1,194,119	„
Total	3,385,669	piculs

To the above total we must add the three British mills, which consume 330,000 piculs, and the 30 Japanese mills, which consume 2,224,475 piculs, thus making the grand total of annual consumption of cotton in all mills in Kiangsu Province 5,940,144 piculs. The following table shows the relative quantity of cotton consumed by the various Chinese mills:

	No. of Mills	Actual Amount Consumed	
Under 10,000 piculs	2	14,680	piculs
10,001-20,000	2	24,600	„
20,001-30,000	7	169,246	„
30,001-40,000	5	173,250	„
40,001-50,000	3	139,280	„
50,001-60,000	4	230,736	„
60,001-70,000	4	254,335	„
70,001-80,000	3	225,605	„
80,001-90,000	1	84,237	„
90,001-100,000	3	286,685	„
100,001-110,000	—	—	
110,001-120,000	1	113,800	„
120,001-130,000	2	259,360	„
130,001-140,000	4	544,100	„
140,001-150,000	2	291,575	„
Over 150,000 piculs	3	538,900	„
Unknown	2	—	
Total	48	3,385,669	piculs

Cotton consumed in Kiangsu mills comes from either one of the following three sources:—

	Piculs.
Local cotton fields (Average output 1027-1931)	1,634,172
Imported from abroad (Average 1927-1931)	2,041,765
Imported from other provinces (Average 1927-1931)	1,134,256
Total	4,810,193

The annual deficit between the supply and consumption of cotton in the Province is about 1,000,000 piculs. This, however, does not exactly presents the fact, for the figures for imported cotton from abroad and from other provinces are taken from Customs returns, which does not include that amount of cotton transported through inland waterways and overland routes. Although the figures for imports also include re-export, but the figures for the last item are estimated at not over 100,000 piculs. Moreover, owing to difficulties, it is not infrequent to find that some mills have suspended operations entirely and some have shortened their daily working hours. Therefore, the actual quantity of cotton consumed by the mills is much less than as estimated, whereas the quantity of supply is somewhat higher than as calculated, and thus making the supply and consumption figures barely meet.

Cotton consumed by Chinese cotton mills in Kiangsu used to be in the proportion of 60 per cent domestic and 40 per cent imported. Kiangsu cotton from Kiangyin, Nantung, Changshu, Kiating, Taitsang, and Pootung is most extensively used in Chinese mills. But sometimes Honan, Shansi and Hupeh cotton of fine quality is used to fill up the deficiency of Kiangsu products. Among the domestic cotton, that from Chengchow and Lingpao are known as of the best quality, having the favorable length,

width and twist suitable for manufacturing yarns around 30 counts. Among Kiangsu cotton Kiangyin produce is recognized as possessing the best quality.

In the last few years imported cotton occupies a more important position than domestic cotton. In addition to lack of facilities of transportation thus making the supply not very regular, the output and quality of Chinese cotton is much inferior to that of the imported, while at the same time the over-production of American cotton have brought the price down to such an extent that despite of the unfavorable rate of exchange Chinese cotton merchants are still able to purchase in large quantities. As yarns manufactured in China are below 20 counts, fine cotton is not needed and only American cotton of medium grade and Indian cotton are imported.

OUTPUT OF YARN

Although it is a fact that the number of mills and amount of output are both increasing from year to year, no exact figures can be obtained of the quantity of yarn turned out by the mills in the Province. The following table, compiled from the report of the Chinese Cotton Millowners' Association gives a rough idea of capacity of Chinese mills from 1919:*

	Bales.
1919	348,409
1921	391,510
1922	560,836
1924	610,643
1925	599,831
1927	677,271
1928	712,408
1930	796,147
1931	939,554
1932	914,150

*Figures for 1920, 1923, 1926 and 1929 Wanting.

The above figures, although not complete, shows a fairly satisfactory progress. The actual amount in each case should be larger than as given, as every year there were mills who failed to turn in their report to the Association, thus the amount of their output is not included in the table.

Most of the yarns produced by the mills in various places in the Kiangsu Province are 10-count, 12-count, 14-count, 16-count, and 20-count. Very few mills are turning out fine yarns, and in Wusih and Wuchin 20-count yarn is about the finest turned out. The Wing On Mills in Shanghai, however, are the only mills which supply yarns of 60 counts, while most of the Japanese mills established here are spinning but fine yarns, most notably the Naigai Wata cotton mill. In the following are described the various kinds of yarns turned out by Chinese mills.

10-count yarn—Spun with 75% Yuyao cotton and 25% Ningpo cotton, only used for weaving very coarse cloth or making ropes. Some of the 10-count yarn brands are Taching's (大慶) "Sail Boat," Wing On's "Kincheng," (金城) and Shen Hsin's (申新) "Man & Bell,"

12-count and 14-count yarn—Spun with about 25% Nantung cotton, 20% Shensi cotton, 40% Taitsang cotton and 15% Shanghai cotton, and is used for weaving coarse cloth.

16-count yarn—Spun with 25% of good quality Nantung cotton or American cotton, 25% Shensi cotton, 25% Taitsang cotton and 25% medium quality American cotton. Brands: Wing On's "Kincheng," Ta Feng's (大豐) "Balloon," Shen Hsin's "Man & Bell."

20-count yarn—Spun with 30% of high grade Nantung, or American or Lingpao cotton, 30% Shensi, 30% ordinary Hankow cotton, and 10% Shanghai cotton. It is used for weaving finer cloths, sheetings, drills and jeans, etc. Brands: Wing On's "Kincheng," "Ta Peng (大鵬)," Su Lun's, "Tien Kuan (天官)," Shen Hsin's "Dragon Boat."

Yarns of over 20 and below 32 counts—Mostly double ply and spun with Nantung and Lingpao cotton, mixed with American cotton. It is used in weaving fine cloths, drills and jeans, cotton serge, sheetings and as thread. Brands: Wing On's "Kincheng," Su Lun's "Tien Kuan," Shen Hsin's "Man & Bell."

Yarns above 32 counts—Most of these yarns are double ply or triple ply and are spun with American cotton, together with Lingpao and Egyptian cotton.

They are used in weaving finer kinds of cotton piece goods, serges, sheetings, hosiery, and undergarments, and making linen. Brands: 42-count, Shen Hsin's "Man and Bell," Wing On's "Kincheng"; 60-count, Wing On's "Ta Peng," and "Kingcheng."

As stated above, the total output of yarn from the Chinese mills in Kiangsu in 1932 was 914,150 bales. This figure do not include the output of the Li Hsin Mill of Wusih and the Fu Ta Mill of Wuchin. The mill with the largest output was the Dah Sun Mill of Nantung, but if taking all the branch mills into consideration, the Shen Hsin Mills produced 203,668 bales head the list, with Wing On Mills, producing 127,500 bales, next, and Ta Sheng Mill, producing 117,106 bales, third. Detailed distribution of the output is tabulated as follows:

	No. of Mills	Total Output
Under 5,000 bales	6	22,063 bales
5,001-10,000	9	68,164 „
10,001-15,000	4	51,089 „
15,001-20,000	10	171,855 „
20,001-25,000	3	68,427 „
25,001-30,000	3	79,495 „

30,001-35,000	1	34,800 „
35,001-40,000	4	148,060 „
40,001-45,000	3	125,937 „
45,001-50,000	2	92,364 „
Over 50,001	1	51,900 „
Unknown	2	——
Total	48	914,150 bales.

From the above table, it may be seen that those mills consuming over 100,001 piculs of cotton generally produce over 25,001 bales of yarn, those consuming from 50,001 to 100,000 piculs of cotton, producing from 15,001 to 25,000 bales of yarn, while those consuming under 50,000 piculs of cotton, their production is generally under 15,000 bales. The comparative percentages are as follows:

	Mills %	Cotton Consumed %	Output of Yarn %
Mills consuming over 100,000 piculs of cotton	28	51	59
Mills consuming under 100,000 piculs of cotton	72	49	41

Yarn produced by Kiangsu mills is generally packed in the following manner: every 16 ply of yarn are packed into one small package, and 40 small packages into one bale, each weighing 410 pounds, or 307 catties. About 350 catties of cotton is required in spinning into one bale of yarn. The number or ply contained in each small package, and the number of small ply contained in each ply are differed according to the fineness of the yarn as follows (Each small ply has a definite length of 840 yards):—

Counts	No. of Big Ply	No. of Small Ply
12	24	120
14	14	140
20	20	200

The following table shows the quantity of cotton consumed, quantity of yarn and cloth produced, together with their trade marks, of all the Chinese mills in Kiangsu:—

Name of Mills ●In Suspension ▲Not Yet Opened ※With Foreign Investment	Cotton Consumed (Piculs)	Output of Yarn (Bales)	Output of Cotton Piece Goods (p'cs s)	Trade Marks Yarn	Cotton Piece Goods
Heng Feng Textile Mfg, Co.	145,935	40,415	592,780	Fu Kuei (富貴) Golden Lion 金獅) Cloud Crane (雲鶴)	Peony (牡丹) Five Stork (五鶴) Old Man 壽人) Three Sheep (三羊) Horse Feeding (景馬) Mo Nain (牧牛) Double Eagle (雙鷹) Globe (地球) Fish Spear (魚鏢) Cloud Crane (雲鶴)
Chen Hua Lee Kee Cotton Mfg, Co., Ltd.	34,000	9,600		Double Elephants (雙象) Double Dragons (雙龍) Automobile (汽車) Fu Li (福利)	
Shen Hsin Cotton Mill (No. 1)	73,592	20,088	661,852	Man & Bell (人鐘) Beauty (美人)	Man & Bell (人鐘) Double Bell (雙鐘) Three Bells (三鐘) Four Bells (四鐘) Five Bells (五鐘) Heaven (天字) Brothers (兄弟)
Shen Hsin Cotton Mill (No. 2)	74,113	24,510		Man & Bell (人鐘) Hou Tsu (好做) Boy Scouts (童子軍) Beauty (美人) Pagoda (寶塔) Gold Bell (金鐘) Sian Fu (象佛)	
Shen Hsin Cotton Mill (No. 5)	77,900	16,030		Man & Bell (人鐘) Hau Tsu (好做) Pagoda (寶塔) Gold Bell (金鐘) Bless (福字) Beauty (美人) King-Shuang She (金雙喜)	
Shen Hsin Cotton Mill (No. 6)	21,483	4,657	42,593	Man & Bell (人鐘) Song She (雙喜) Huan She (歡喜)	Trapping Three Tigers (圍三虎) Man Spear & Red Cock (人鏢紅雞) Huan She (歡喜) Jen Tin (人龍) Man & Bell (人鐘) Hero & Beauty (英雄奇遇) Taiang Jeh Tu (旗日圖)

Shen Hsin Cotton Mill (No. 7)	91,600	25,805	391,844	Man & Bell (人鐘) Dragon Boat (龍船) Tsao Tsai (招財) Anchor (錨錨) Gold Bell (金鐘) Pagoda (寶塔) Sian Fu (象佛) Ssupin Lien (四平蓮)	Vessel of Precious Things (聚寶盆) Gold Bell (金鐘) Man & Bell, Jen Yuan Pao (人元寶)
Shen Hsin Cotton Mill (No. 8)	129,360	36,960		Man & Bell (人鐘) Rei Man & Bell (紅人鐘) Blue Man & Bell (藍人鐘)	
Shen Hsin Cotton Mill (No. 9)	140,000	36,400	512,000	Golden Double Horse (金雙馬) Tsai Hwo (採花) Man & Bell (人鐘) Golden Cock (金鷄) Red Dragon (紅團龍) Blue Dragon (藍團龍) Stork (團鴻) Teh Li (得利)	Three Cocks (三雞) Grass Ox (艸牛) Fu Kuan (富貴) Horse & Dog (馬狗) Man & Pagoda (人塔) Five Horses (五馬) Fisherman's Profit (漁翁得利)
Pu Yee Spinning & Weaving Co. (Mill No. 1)	60,985	17,890		Globe (單地球) Double Globe (雙地球)	
Pu Yee Spinning & Weaving Co. (Mill No. 2)	55,000	15,048	200,000	Globe (單地球) Double Globe (雙地球)	Globe (單地球) Double Globe (雙地球)
Wei Tung Ho Kee Textile Mfg. Co. Ltd.	7,480	2,707		Peacock (Golden, Red, Colored) (孔雀,金,紅,彩) Double Deer (Golden & Blue) (雙鹿,金,藍) Green Three Deer (綠三鹿)	
Tung Yee Spinning & Weaving Co. Ltd.	130,700	45,364		Golden Cock (金鷄) Liu Hai (劉海) Colored Butterfly (彩花蝶) Cat Butterfly (貓蝶) God of Riches (財神)	
Heng Dah Sing Kee Cotton Mill	30,500	8,340		Airplane (飛機) Success (成功) Colored Airplane (彩飛機)	
Wing On Textile & Mfg. Co. (Mill No. 1)	134,120	35,500	953,750	Gold City (金城) Chia Ho (嘉禾)	Gold City (金城) Money (金錢) Chia Ho (嘉禾) Big Roc (大鵬)

Wing On Textile & Mfg. Co. (Mill No. 2)	170,000	47,000		Gold City (金城) China (大中華) Money (金錢) Chia Wu (嘉禾) Big Roc (大鵬)	
Wing On Textile & Mfg. Co. (Mill No. 3)	160,000	45,000	200,000	Gold City (金城) Chia Wu (嘉禾) Money (金錢) Pao Tin (寶鼎)	Gold City (金城) Money (金錢) Chia Wu (嘉禾)
Dah Feng King Kee Textile Mfg. Co. Ltd.	113,800	26,124	114,086	Sail Boat (帆船) Ballon (汽球) Train (火車) Tai Shan (泰山) Jen Chiu (人球) Jen Hoh (人和) Chen Fen Teh Ee (乘風得意)	Boy Scouts (童子軍) Playing Ball (玩球) Parrot, Dah Fah (大發) Ballon (氣球)
Chen Tai Textile Mfg. Co. Ltd.	55,962	17,208	177,500	Hun Fu (鴻福) Sian Tun (象寶) Song Chuan (雙全)	Hun Fu (鴻福) Sian Tun (象寶) Song Chuan (雙全)
Hung Chang Spinning, Weaving & Dyeing Co.	49,280	14,140	89,807	Pao Yee (寶鷁) Fu Sur (福壽) Hun Chuan (鴻聯)	Hun Chang (鴻聯) Three Sheep (三羊) Double Phoenix (雙鳳) Fast Horse (快馬) Double Horse Globe (雙馬球) Cock Ball (雞球) Lion Ball (獅球) Eagle Ball (鷹球) Pao Yee (寶鷁)
Tung Chang Sheh Kee Cotton Mill	7,200	1,920		Dragon Horse (龍馬) General (將軍)	
Yung Yu Ho Kee Textile Mfg. Co. Ltd.	130,000	34,800		Three Sheep (三羊) Three Friends (三友)	
Tsung Sin Textile Mfg. Co. Ltd. *	145,640	40,522		Sa Kee Dah Fah (四季大發)	
Lung Mer Textile Mfg. Co. Ltd.	23,400	5,500		Tilling & Studying (耕讀) Heart Dragon (心龍)	
Pao Hsing Cotton Mill	41,000	11,800		Golden Star (金寶星) Red Star (紅寶星)	Blue Star (藍寶星)
Shen Fen Yee Kee Cotton Mill	12,600	3,600		Flying Swan (飛鴻)	
Ming Shen Textile Mfg. Co. Ltd.	12,000 35,000 Cotton Waste	8,000		Double Lion (雙獅)	Double Lion (雙獅)

King Wei Ming Kee Cotton Mill	22,000	5,400		Cock Ball (雞球) Tae King Shan (紫金山) King Shan (金山)	Cock Ball (球鷄)
Above All located in the Municipality of Greater Shanghai	2,191,550	600,440	3,936,206		
Dah Shung Cotton Mill (No. 1 A) (Nantung)	208,900	51,900	273,000	Hun Kui Sin (紅魁星)	Pomegranate (石榴) God of Riches (財神) Three Stars (三星) Tramway (電車) Peacock (孔雀)
Dah Shung Cotton Mill (No. 1 B) (Nantung)	66,800	18,764		Kui Sin (Golden, Red, Blue) (魁星,金,紅,藍)	
Dah Shung Cotton Mill (No. 2) (Chetung)	66,000	18,880	65,675	Sir Sin (將星) Sir Loh (將鹿) Steamship (輪船)	Deer (單鹿) Double Deer (雙鹿) First Class Peach (一品桃) Dragon & Phoenix (龍鳳) Bat (蝙蝠)
Dah Shung Cotton Mill (No. 3) (Haimen)	96,400	27,562	178,104	Three Stars (三星) Old-man and Peach (老人桃)	Double Dragon (雙龍) Tuan Lun (團龍) Green Dragon (青龍) Cloud Dragon (雲龍) Winged Dragon (飛龍) Lion (獅子)
Dah Tung Cotton Mill (Tsungming)	39,600	11,320		Shuttle (梭子) Big Airship (大飛艇)	
Yih Cheng Cotton Mill (Wusih)	25,000	7,000		Sau Hai Shen Ping (四海昇平) Double Beauty (雙美) Teh Li (得利)	
Chen Sing Textile Mfg. Co. Ltd. (Wusih)	59,234	16,234		Morning Cock (晨鷄) Tuan Hoh (團和) Tung Li (同利) Globe Stock (球鷄)	Tung Li (同利) Morning Cock (晨鷄) Globe Stock (球鷄)
Kwang Chen Textile Mfg. Co. Ltd. (Wusih)	60,550	17,000	42,000	Weaving Girl (織女) Flying Eagle (飛鷹)	Weaving Girl (織女)
King Feng Textile Mfg. Co. Ltd. (Wusih)	98,865	17,907	262,086	Song Yu Chein (雙魚吉慶) Shepherd (牧童) Loh Hoh Tung Chen (鹿鶴同春)	Song Yu Chein Chen (雙魚吉慶) Shepherd (牧童) Loh Hoh Tung Chen (鹿鶴同春)
Yu Kong Textile Mfg. Co. Ltd. (Wusih)	49,000	13,820		Girl in Moon (月娥) Nine Dragons (九龍)	

Shen Sing Cotton Mill (No. 3) (Wusih)	133,280	39,200	470,000	Man & Bell (人鐘) Han Tsu (好做) Ssu Ping Lien (四平蓮)	Man & Bell (人鐘) Se Ping Lien (四平蓮) Shaking Hands (提手)
Li Sing Spinning, Weaving & Dyeing Co. (Wusih)				Double Carp (雙鯉)	Sze Mo Kuang (司馬光) Huei Chuen Shan (惠泉山) Carp Stor (鯉魚) Weaving Goddess (天孫織錦) Tsian Nie Ju Yee (千年如意)
Su Lun Cotton Mill (Soochow)	84,237	28,820	137,000	God of Heaven (天官)	Flying Swan (飛雁) Flying Eagle (飛鷹) Wonderful Eagle (神鷹)
Fu Shun Spinning & Weaving Co. (Changshu)	27,200	7,600		Double Phoenix (雙鳳)	
Li Tai Textile Mfg. Co. Ltd. (Taichang)	59,040	16,800		Awakened Lion (醒獅) Gods of Harmony (和合) Tilling & Weaving (耕織)	
Ming Feng Textile Mfg. Co. Ltd. (Changchow)		4,850		Fairy Girl (仙女) Pao She (報喜)	
Dah Chen Spinning Weaving & Dyeing Co. (Nos. 1 & 2) (Changchow)	28,203	7,524	224,500	Six Stocks (六畜) Red Stock (紅雞)	Winged Bear (飛熊) Double Rabbit (雙兔) Hero (英雄) Teaching Sons (訓子) Cat & Sparrow (貓雀) Butterfly Ball (蝶球) Tai Saw Ss (太少獅) King Pa Yee (金八益) Tsai Pa Yee (彩八益) Hoh Tin (鶴鼎) Fu Tin (福鼎) Song She (雙喜) Liu Hai (劉海)
Li Yun Textile Mfg. Co. Ltd. (Kiangyin)	32,150	9,200		Nine Lions (九獅)	
Fu Dah Cotton Mill (Changchow)				Blessing Star (福星)	
Tung Cheng Cotton Mill (Changchow)	22,000	4,329	31,509	Cheu Chiao 乞巧	Wise Mother (賢母)
Above All Located in Kiangsu Province)	1,157,119	313,710	1,690,774		

MARKETING AND TRANSPORTATION

As Kiangsu is the center of the cotton spinning industry in China, cotton yarn produced in the Province is used in all parts of the country, and a considerable quantity of it is exported to Hongkong, Straits Settlements and India. Formerly, when the cotton spinning industry in China was still in an undeveloped stage, large quantities of cotton yarn were imported from foreign countries. In recent years, however, cotton yarn imports have been decreasing, while that exported from China have been steadily increasing in volume. The following table shows the imports and exports of cotton yarns in the last six years:

	Imports from Abroad (piculs)	Exports of Chinese Yarn from S'hai. (piculs)
	2,280,878	——
1912	2,298,479	——
1916	2,466,932	——
1926	449,280	2,294,149
1927	295,338	2,090,260
1928	284,945	2,241,460
1929	234,126	2,200,703
1930	162,430	2,602,463
1931	47,951	2,628,222

The increase in the quantity of cotton yarn exported from Shanghai is indicative of the development of Kiangsu cotton spinning industry, as approximately 83 per cent of Chinese cotton yarn export is from Shanghai and all cotton yarn produced in Kiangsu that goes to other ports and foreign countries must pass this city.

Most of the cotton yarn produced in Kiangsu goes to other Chinese ports, though a considerable amount is exported to Hongkong, India and Straits Settlements. Cotton spinning factories in Wusih, Wuchin, and Nantung sell their products in Kuangsi and Kuangtung and North China, besides supplying their local needs. Most of the cotton yarn that goes to other parts of China is re-exported from Shanghai, but occasionally, products of Wusih factories are sent to North China by the Tientsin-Pukow Railway.

The following table shows all important home markets of Kiangsu cotton yarn, the brands that are popular in each place and the average amount of annual consumption:

	Popular Brands	Annual Consumption (being the average of the last five years)
Kuangtung	Sui-Yueh (水月), 42-count. Kin-Cheng (金城), 32-count. Hsien-Tao (仙桃), Li-Ma (立馬), 20-count. Chia-Ho (嘉禾), Shuang-Ti-Chiu (雙地球), Hung-Ho-Fung (紅荷蜂), Sail-Boat, Ta-Pao (大寶), Fu-Kuei (富貴), 10-count	444,196 pls.
Szechuen	Kin-Chen, Tsai-Chiu (彩球), 32-count. Shepherd, Man and Bell, Chai-Hwa (採花), God of Heaven (天官), Double Horse (雙馬), Li-Ma, Globe, Hung-Kuei-Sin (紅魁星), Chai-Kuei-Sin (彩魁星), Hung-Hsi (鴻禧), Blue Phoenix, Hung-Fu (鴻福), 20-count. Sail Boat, Captain, Balloon, Hung-Kuei-Sin, 10 count	288,076 „
Tientsin	Wu-Fu (五福), Kin-Chi (金雞), Sunshine, Li-Ma, Fu-Kuei, Feng-Nien (豐年), 20-count. Kin-Cheng, Man and Bell, San-Yang (三羊), Sunshine, Shou-Sin (壽星), 16-count. Fu-Kuei, Si-Ping-Lien (四平蓮), Five Lions, Globe, 10-count	160,697 „
Hankow	Sui-Yueh, Blue Phoenix, 42-count. Shuang-Hsi (雙喜), Tien-Kuan, San-Yang, Kin-Cheng, 32-count. Shepherd, Wu-Fu, Pao-Yi (寶衣), Kin-Cheng, Li-Ma, Pao-Yi (寶衣), 20-count	298,527 „
Changsha	Pao-Yi, Shepherd, Kin-Cheng, Double Horse, Li-Ma, Balloon, Shuang-Hsi, 20-count. Kin-Cheng, Golden-Lion, 10-count	—
Swatow and Amoy	Sui-Yueh, 42-count. God of Heaven, 32-count. God of Heaven, Hung-Hsi, Li-Ma, Wu-Hsi, 20 count. Man and Bell, Red Dragon, Balloon, San-Yang, 16-count. God of Heaven, Sail Boat, Five lions, Wakened Lion, 10-count	197,248 „

Kiukiang	Kin-Cheng, 60-count. Blue Phoenix, 32-count. Shepherd, Blue Phoenix, Wu-Fu, Man and Bell, 20-count. Kuei-Sin, Balloon, 16-count	165,608 „
Newchwang and Chinwangtao	Sun and Stork, Kin-Cheng, Sui-Yueh, 42-count. Sien Tao, Li-Ma, Wu-Fu, 20-count, Sunshine, Man and Bell, God of Heaven, Fu-Kuei, Double Elephant, Ta-Fa (大發), Aeroplane, San-Yang, Kin-Cheng, Feng-Nien, 16-count. Fu-Kuei, 10-count	102,871 „
Tsingtao	Ta-fa, Golden Hen, Hung-Kuei-Sin, Aeroplane, Kin-Cheng, 16-count. ..	7,709 „
Ningpo	Wu-Fu, Hung-Hsi, Hung-Kuei-Sin, Sui-Ma (瑞馬), Blue-Phoenix, Man and Bell, Feng-Nien, Li-Ma, 16-count.	24,672 „
Yunnan	San-Sin (三星), Golden-Hen, Kin-Cheng, 20-count. Ta-Fa, Kin-Cheng, Golden Hen, 10-count.	——
Shanghai	All brands can be found, but the Man and Bell brand is taken as the standard	450,000*

The following table shows the change in the prices of forward and spot cotton yarn in past ten years, the "Man and Bell" brand, 16 count, being taken as the standard.

	Forward (16-count Man and Bell)			Spot	
	Highest	Lowest	Average	Man and Bell (16-count)	Globe (16-count)
1922	₹146.0	₹134.1	——	——	——
1923	170.72	147.5	₹154.96	——	——
1924	175.0	158.9	167.5	——	——
1925	170.2	158.4	163.83	——	₹171.13
1926	153.11	134.4	140.10	₹134.31	140.16
1927	144.16	131.9	139.63	128.31	143.26
1928	163.1	153.7	157.74	176.30	163.27
1929	169.4	156.0	162.88	161.38	171.22
1930	157.8	148.8	153.30	95.13	159.15
1931	——	——	——	170.23	167.50

Despite the fact that in recent years the price of silver has been going steadily downward while wages are much higher, the price of cotton yarn does not show an

*Approx.

upward trend, because the price of raw cotton, the most important factor in the manufacture of cotton yarn, is determined by a world market, which has not shown a fluctuation of very long duration either way in recent years.

In Shanghai, the price of cotton yarn is expressed in taels, while in other places, dollar is the ordinary unit. "Man and Bell' brand is the standard in Shanghai, while the "Girl in Moon" brand of the Yu Kang Factory of Wusih (豫康紗廠) is taken as the standard in other parts of Kiangsu.

FREIGHT AND TAX CHARGES

According to a report made by the Investigation Department of the Shanghai Commercial and Savings Bank in August, 1931, the following were the prevailing rates of freight adopted by the three leading steamship companies in Shanghai, the China Merchants,' Butterfield and Swire, and Nisshin Kisen Kaisha, for cotton yarn to various Chinese ports:

From Shanghai to	Rebate (Per cent)	China Merchants, (Taels)	Butterfield and Swire (Taels)	Nisshin Kisen Kaisha (Taels)
Tientsin	35	5.04 per bale	8.22 per ton	—
Newchwang	45	3.85 „ „	—	—
Dairen	10	1.82 „ „	4.40 „ „	1.20 per bale (net)
Tsingtao	45	2.20 „ „	4.40 „ „	1.00 „ „ (net)
Hankow	—	3.20 „ „	3.20 per bale	3.20 „ „
Wuhu	—	2.30 „ „	2.20 „ „	2.30 „ „
Ningpo	—	1.12 „ „	—	—
Canton	15	4.20 „ „	9.30 per ton	2.20 „ „
Amoy	15	2.64 „ „	7.98 „ „	3.64 „ „
Swatow	15	2.64 „ „	7.98 „ „	2.64 „ „
Kiukiang	—	3.20 „ „	3.20 per bale	3.20 „ „
Hongkong	15	3.10 „ „	6.77 per ton	3.10 „ „
Changsha	—	5.52 „ „	5.30 per bale	5.10 „ „

Cotton yarn destined for abroad is subject to an export tariff at the rate of Hk. Tls. 1.10 per picul, in addition to wharfage dues equal to 2% of the amount of duty. Goods for China ports, already subject to Consolidated tax, are free of Customs duties except when shipped to places where the system of Consolidated tax has not yet been introduced, the rate of duty in this case being fixed at Hk. Tls. 0.07 a picul. Consolidated tax is levied at two different rates according to the quality of the goods exported, coarse yarn below 23 counts being rated at $2.75 per picul or $8.58 per bale of 320 catties, while the finer variety pays $3.75 per picul or $11.63 per bale.

TRADING CUSTOMS

Domestic and foreign cotton is generally purchased by the mills in one or other of the following ways:

Direct Purchase from Farmers.—During September and October cotton-mills usually send special agents to the cotton growing districts to collect the new crop direct from farmers. Prices are paid by picul.

Purchase from Hua Hong (花行).—Instead of making direct approach to farmers, cotton mills may buy their supplies from cotton brokers or *hua hong*, who usually stipulate, before the picking of the crop, with the mills regarding the quantity needed, prices, date of delivery, etc. These brokers, while facing considerable risk, make handsome profits out of forward dealings by reason of their long experience and detailed knowledge of the cotton market.

Purchase from Hua Hao (花號).—Spot cotton or futures may be also purchased from *hua hao* or cotton dealers, who make it their business to ship and sell Chinese cotton from places in the interior. Delivery is made either

to warehouse or direct to the mill, the latter being more expensive.

Purchase on Exchange.—Another way to get cotton is to buy on the Chinese Cotton Goods Exchange, Shanghai. This method, however, is less preferred on account of its highly speculative character.

Purchase from Foreign Firms.—When foreign cotton is needed, purchases must be made from foreign importing firms. The general procedure involves examination of samples, bargaining over terms, conclusion of a contract and, finally, delivery at a stipulated date. Recently, an association has been formed among Chinese mills with a view to reducing the cost of transporting the Indian staple to a minimum.

Besides operating sales offices in various important cities, it has been the usual practice of the mills to maintain sales departments to facilitate the disposal of their products. Their principal customers consist of the following concerns:—

Yarn Shops, formerly practically the only class of merchants who bought direct from the mills, but later, when other groups were brought into close contact with the manufacturers, they gradually lost ground. Brokers who act as middlemen between the shops and the mills charge one or two tael cents commission for every bale of yarn handled.

Firms in the Interior.—These usually have representatives in Shanghai, who order goods from local mills as instructed. On account of the large quantity they buy, special quotations are often given them. Brokers who serve as intermediaries are required to supply the mills from time to time with credit information concerning customers.

The Cotton Goods Exchange forms a third channel for disposing of the product of the mills.

Foreign Exporting Firms.—Transactions with foreign exporters may be either spot or forward, prices being fixed exclusive of tax. Consolidated tax, according to the usual custom, is paid by the producers and refunded by the purchasers at the time of shipment.

WEAVING

Cotton weaving industry in Kiangsu Province did not exist until the closing years of the Tsing Dynasty, when the imports of foreign cotton piece goods were in their climatic days. In the beginning this industry was only a side line to the cotton mills, and the first cotton mill engaged in weaving piece goods was the Yang Pu Chu (洋布局) of Shanghai established in 1890. The next factory came into existence was the Chin Yu Company (晉裕公司) of Wuchin, established in 1904, which was followed by the Hua Chen Cloth Weaving Company (華澄織布公司) of Kiangyin in 1905, and the Chuan Kung Cloth Mill (勸工布廠) of Wusih in 1909. But this marked only the transitional period of the cotton weaving industry for it was during this period the old wooden looms were gradually changed to iron looms driven by motor power, and it was not until the advent of the Republic in 1912 this practice became popular among a great number of mills.

PRESENT CONDITION

Kiangsu is the center of cotton weaving industry in China. It has a total of 231 mills, of which 53 per cent are located at Shanghai, 9 per cent in Wusih, 8 per cent in Wuchin, 5 per cent in Kiangyin, 4.7 per cent in Sungkiang, and the remaining 24.3 per cent scattered in other districts. Particulars of various mills are tabulated as follows:

	No. of Mills	No. of Workers	Capital	No. of Looms	Remarks
Shanghai	124	10,000	$ 3,500,000	10,862	——
Wusih	23	2,022	762,300	4,616	Six mills unknown
Wuchin	18	3,372	1,929,000	1,223	——
Kiangyin	13	2,634	215,500	1,367	Capital: one mill unknown
Sungkiang	11	408	45,800	345	——
Nantung	6	3,173	₮ 4,000,000	850	Including the Dah Sun Mill
			$ 23,000		
Changshu	5	1,208	30,500	710	Looms: one mill unknown
Nanking	5	104	30,500	——	Workers: one mill unknown
Chuansha	4	192	13,500	——	——
Kiating	3	562	84,000	231	——
Ihsing	3	68	1,800	58	——
Tsungming	2	80	5,400	——	——
Tsingkiang	2	77	10,500	65	——
Haimen	3	170	5,500	724	Capital & Workers: one mill unknown
Wuhsien	2	19	10,000	——	" "
Tanyang	1	105	20,000	20	——
Kunshan	1	51	10,000	40	——
Taihsing	1	40	5,000	35	——
Chitung	2	25	5,000	210	Capital & Workers: one mill unknown
Suchien	1	62	15,000	49	——
Nanhui	1	64	2,000	52	——
Total	231	24,336	$12,204,300	21,457	

Cotton weaving mills in Kiangsu may be classified under four categories: (1) "Small mill" or *hsiao chang* (小廠), which are merely workshops equipped with hand looms only. Their chief output consists of striped and checker cloths, and they are scattered in the interior parts of the Province. (2) "Mercerised cotton weaving mill" or *ssu kuang mien chi chang* (絲光棉織廠), which form the nucleus of the cotton weaving industry in Kiangsu Province. They are mostly located in Shanghai, Wusih, Wuchin and Kiangyin, and are equipped with looms made by the combination of iron and wood. Their chief output consists of mercerised cotton serges, drills and jeans, sheetings and cotton pongees. (3) Dyeing and weaving mills, which are chiefly engaged in dyeing with weaving as their side line. There are seven such mills now operating in the Province with five in Shanghai and one each in Wusih and Wuchin. They are equipped with over 1,000 looms, and turning out about 500,000 pieces of cotton cloth every year. (4) "White goods cotton weaving mill' or *pei huo mien chi chang* (白貨棉織廠) are the cloth mills attached to cotton spinning mills. They are equipped with modern looms and turning out output in a large scale. At present, there are 20 such mills operating in the Province, with 11 in Shanghai, 3 in Wusih, 2 in Wuchin and one each in Wuhsien, Nantung, Chitung and Haimen.

The organization of various mills differs widely. Generally it may be grouped under three categories, namely, the factory system, the craftman system, and the merchant employer system. The factory system, which is the most important of all, practically includes all the "white goods," "mercerised" and dyeing mills. The craftman system merely consists of small workshops which have only a capital of a few hundred dollars and equipped with a few looms. These are mostly pursued by farmers as a side line and assisted by their family members aiming at bringing in extra income to the family. The mills under the merchant employer system are weaving agents only. They usually purchase a few looms and employ a few operatives but obtaining the raw material from other large mills.

CAPITAL

Except the "white goods" mills, the capital of which cannot be distinguished from that invested in cotton spinning industry, the total capital of cotton weaving mills in the Province is estimated at $12,204,000. Particulars in their distribution are as follows:

	No. of Mills in Shanghai	No. of Mills in other districts	Total
Under $500	35	3	38
$501-$1,000	9	11	20
$1,001-$2,000	12	5	17
$2,001-$3,000	6	14	20
$3,001-$4,000	6	4	10
$4,001-$5,000	6	7	13
$5,001-$6,000	1	3	4
$6,001-$7,000	1	—	1
$7,001-$8,000	1	1	2
$8,001-$9,000	1	4	5
$9,001-$10,000	4	12	16
$10,001-$50,000	20	23	43
$50,001-$100,000	3	4	7
Over $100,001	6	5	11
Total	111	96	207

From the above table it seems that the capital of Shanghai mills is smaller than those in other cities. But we shall bear in mind that the capital of "white goods" mills in Shanghai is not counted in, while in other cities, the capital of a few "white goods" mills is also included. Moreover, the investigation of small mills in Shanghai is very thorough, while in other cities only the large mills are investigated.

LOOMS

Looms used by the various mills can be divided into three groups, namely, the iron looms, the iron-wood looms, and the wooden looms. The iron looms are chiefly imported from Great Britain, the United States and Japan at the

cost of Tls. 300 each. The iron-wooden looms are the most popular looms used by all mills. They are home-made and sold at from $20 to $40 each. The wooden looms are operated entirely by human power, sold at $8-$12 each.

In Shanghai and Wuchin looms are generally driven by electric power, in Kiangyin, steam and Diesel engines are used, while in Sungkiang and Chuansha, hand looms are the most popular. In some large mills in Shanghai, automatic looms are installed, costing about Tls. 900 each.

The rate of production is differed with different kinds of looms used. Generally, an iron loom is able to turn out 40 yards a day, iron-wooden loom driven by power motors turns out 30 yards a day, while the output of iron-wooden looms and wooden looms driven by manual power is from 10 to 30 yards a day.

Particulars in regard to the distribution of looms are as follows:

	No. of Mills in Shanghai	No. of mills in Other Cities	Total
Under 5 looms	13	—	13
6-10	19	5	24
11-20	26	9	35
21-30	14	7	21
31-40	6	9	15
41-50	2	19	21
51-60	3	6	9
61-70	4	7	11
71-80	2	6	8
81-90	1	1	2
91-100	—	2	2
101-200	4	15	19
201-300	8	4	12
301-400	4	2	6
401-500	4	1	5
Over 500	10	7	17
Total	120	100	220

The following table shows the distribution of the various kinds of looms in Shanghai and in other cities:

	Iron and Iron-Wooden Looms		Wooden Looms	
	No. of Mills	No. of Looms	No. of Mills	No. of Looms
Shanghai	58	9,064	62	1,258
Other cities	44	4,995	40	3,471
Total	102	14,599	102	4,729

WORKERS

The total number of operatives employed by all the cotton weaving mills in Kiangsu is estimated at over 20,000, of which about 40 per cent are in Shanghai. They are distributed as follows:

	No. of Mills in Shanghai	No. of Mills in Other Cities	Total
1-5	10	—	10
6-10	19	2	21
11-20	14	6	20
21-30	14	4	18
31-40	10	3	13
41-50	2	13	15
51-60	4	7	11
61-70	2	8	10
71-80	2	3	5
81-90	2	9	11
90-100	3	1	4
101-200	8	17	25
201-300	13	13	26
300-400	1	2	3
401-500	3	1	4
Over 501	11	8	14
Total	108	97	205

Workers are paid at a different rate in different places, the average daily rates are tabulated as follows:

	Male Worker	Female Worker	Juvenile Worker
Shanghai	$0.75	$0.55	$0.35-$0.40
Wusih	0.50	0.45	0.20
Wuchin	0.54	0.45	0.35
Nantung	0.40	0.25	——
Kiangyin	11.00 (a)	0.40 (b)	0.16 (c)

(a) a month; (b) a piece; (c) a piece.

RAW MATERIAL

Chief raw materials used by cotton weaving mills are cotton yarn, mainly from 10 to 40 counts obtained from local cotton spinning mills, thread, chiefly of 32, 40 and 60 counts, formerly imported from Japan, and rayon, which is used in making brocades, with Nos. 120 and 150 imported from Italy, France, Germany and Great Britain being the most popular. The following table shows the distribution of raw materials among various mills:—

	No. of Mills
Cotton yarn	102
Cotton thread	7
Yarn and thread	70
Yarn, thread and rayon	4
Yarn and rayon	6
Thread and rayon	3
Yarn and filature silk	1
Total	193

The distribution of the value of raw materials used by various mills is as follows:

	No. of Mills in Shanghai	No. of Mills in Other Cities	Total
Under $5,000	30	12	42
$5,001-$10,000	13	9	22
$10,001-$20,000	21	9	30
$20,001-$30,000	4	3	7
$30,001-$40,000	10	5	15
$40,001-$50,000	6	3	9
$50,001-60,000	3	1	4
$60,001-$70,000	1	4	5
$70,001-$80,000	5	1	6
$80,001-$90,000	2	3	5
$90,001-$100,000	1	—	1
$100,001-$200,000	10	3	13
$200,001-$300,000	3	3	6
$300,001-$400,000	1	5	6
$400,001-$500,000	—	1	1
Over $500,001	14	6	20
Total	124	68	192

Owing to the different kinds of raw materials used the length and weight of the output also differs. The following table taken from a certain "white goods" mill shows the various types of cotton cloth woven with different types of yarn:

	Sheetings	Shirtings		
	12 P.	14 P.	13½ P.	16 P.
Count of warp yarn	20	14	14	12
Count of woof yarn	20	14	14	14
Length per piece	40 yds.	40 yds.	40 yds.	40 yds.
Width	36 in.	35½ in.	40 in.	40 in.

OUTPUT

Large varieties of cotton cloth are turned out by the various weaving mills in Kiangsu, and the following table shows those which are comparatively popular on the market:

	Length (yards)	Width (inches)	Weight (lbs)	Remarks
Shirtings and Sheetings:				
Grey Shirtings	40	36	6–18	Woven with 20-counts yarn & under.
Grey Sheetings	40	36	11–15	——
Dyed Shirtings and Sheetings	20–40	—	—	——
Dyed or Mercerised Shirtings and Sheetings	—	—	—	Woven with 20-40 count yarn.
T-Cloths:				
Grey T-Cloths	24	32–36	4–9	Woven with 20-40 count yarn.
White T-Cloths	24–40	32	—	——
Turkey Reds	25	28–30	3–8	——
Printed T-Cloths	—	—	—	——
Drills and Jeans:				
Grey Drills	40	30	12–16	Woven with 13-18 count yarn as warp and 10-14 count yarn as woof.
Grey Jeans	30–40	28–31	—	Woven with 20-count yarn as warp and woof.
White Drills and Jeans	31–40	29	—	——
Dyed Drills and Jeans	11	28	—	——
Plain Jeans	31	28	10	——
Printed Drills and Jeans	30	28	10	Woven with 30-40 count yarn.
Figured Jeans:				
Linen	30	28	—	——
Repps	30–40	6–30	—	Woven with 16-24 count yarn as warp and 10-14 count yarn and woof.
Quiltings	34–40	28–40	—	——

Cambrics ..... (			—	) Woven with over 100-count yarn.
Lawns ..... (	12,30,40,60	30-60		) Woven with over 60-count yarn.
Muslins ..... (				)
Crape:				
Cotton Crape	—	—	—	Woven with 30-32 count yarn as warp and 20-count as woofs.
Plain Crape	—	—	—	—
"Willow Pattern" Crape ...	—	—	—	—
Cotton:				
Plain Cotton Flannel	30	32–26	7-9 ounces per square yard	—
White Cotton Flannel	—	—	—	—
Striped Cotton Flannel	30	30	7-9 ounces per square yard	—
Flannel:				
Flannelette	30-40	28	5-ounces per square yard	—
Dyed Cotton Flannel, Flannelette, & Cotton Spanish Stripes	—	—	—	—
Printed Cotton Flannel and Flannelette	—	—	—	—
Cotton Ells and Serges	30	28	8–12	—
Cotton Venetians	30	28	10	Woven with 10-count yarn as warp and 20-count yarn as woof.
Poplins and Cotton Pongees	10	28–30	—	Woven with 60-80 count yarn a warp and 30-40 count yarn and woof.

Owing to lack of statistical data no accurate figure in regard to the amount of output is available. The following table is compiled from the comparative large mills in each district:

	Output in Pieces
Shanghai	5,060,000
Wuchin	1,012,570
Sungkiang	17,800 pcs. 18,000 yds. 21,600 doz. (blanket)
Changshu	141,400
Chuansha	23,640
Ihsing	9,600
Tsingkiang	8,200
Wuhsien	167,000
Kunshan	1,900
Taihsing	4,000
Wusih	1,100,000
Kiangyin	290,500
Nantung	252,000
Kiating	79,800
Tsungming	7,550
Haimen	188,104
Tanyang	2,000
Chitung	80,000
Suchien	13,500
Nanhui	4,000
Peihsien	5,000
Hsiaohsien	1,350
Huaiyin	500
Suining	24,000
Chuyung	3,600

The distribution of annual production capacity (10 months only) among various mills is tabulated as follows:

Pieces	No. of Mills in Shanghai	No of Mills in Other Cities	Total
Under 1,000	12	6	18
1,001-5,000	39	21	60
5,001-10,000	21	11	32
10,001-20,000	16	15	31
20,001-30,000	5	3	8

30,001-40,000	—	6	6
40,001-50,000	1	6	7
50,001-60,000	2	3	5
60,001-70,000	—	1	1
70,001-80,000	—	1	1
80,001-90,000	1	1	2
90,001-100,000	1	1	2
100,001-500,000	6	9	15
Over 500-001	4	—	4
Total	108	84	192

According to an investigation in 1932 of the total output of 5,060,000 pieces by Shanghai mills, the striped and checkered cloths amounted to 60,000 pieces, mercerised cloths, 600,000 pieces, dyed cloths, 500,000 pieces, and other miscellaneous colors, 3,900,000. In Wusih the chief output consists of the striped and checkered cloths, with drills, jeans and nankeens occupying about 30-40 per cent. In Kiangyin the output is composed of 71,000 pieces of drills and jeans, selling at $6.50-$8.50 a piece; 28,000 pieces of white striped cloths, selling at $10 a piece; 63,500 pieces of imitation venetian, selling at $7.50 a piece; 47,000 pieces of cotton flannel, selling at $7-$8.40 a piece; 39,300 pieces of cotton ells, selling at $8 a piece; 10,000 pieces of "chung shan" cloth (中山呢), selling at $10 a piece; 20,000 pieces of "wada" cloth (華達呢), selling at $10 a piece; and 31,000 pieces of cotton pongees, selling at $10 a piece. In Wuchin the chief output is 700,000 pieces of jeans, valued at $5,950,000; 50,000 pieces of figured jeans, valued at $375,000; 20,000 pieces of white striped cloths, valued at $150,000; 30,000 pieces of sheetings, valued at $270,000; and 5,000 pieces of "chung shan" cloth, valued at $55,000. In Changshu the chief output is 48,000 pieces of striped and checkerd cloths, selling at $4.60 a piece; 38,000 pieces of drills and jeans, selling at $2-$4 a piece; 18,000 pieces of cotton flannel, selling at $3-$4 a piece; 14,000 pieces of nankeens, selling at $6.60 a piece; 4,000 pieces of beddings, selling at $6.80 a piece; 10,000 pieces of "chung shan" cloth, selling at $10 a piece; and 10,000 pieces of *shen-po-lai* cloth (勝舶來呢), selling at $6 a piece. In Kiating the chief output is 8,400 pieces of towel cloth, 6,000 pieces of cotton

spanish stripes, and 10,400 pieces of cotton flannel. In Tsungming the chief output is nankeen, the annual production of which is 3,780 pieces, and are entirely consumed locally. In Sungkiang the output is mainly composed of 20,800 pieces of shirtings and sheetings, and 7,100 dozen of cotton blankets.

MARKET

The cotton cloths produced in Kiangsu have a wide market over the country, and sometimes shipments are also made to as far as Singapore. Generally shirtings are mainly shipped to Tientsin; cotton flannel, shirtings, and dyed nankeens to Hankow; shirtings and sheetings to Szechuan; shirtings to Kuangtung; figured cloths to Hunan; drills, jeans, cotton flannel, and shirtings to Kiangsi; drills, jeans, shirtings and sheetings to Fukien; shirtings to Tsingtao, shirtings, drills and jeans to Wuhu, Dairen and Newchwang, and sheetings, figured cloths and mercerised cloths to Shanghai.

According to investigation conducted in October, 1932, the annual amount of cotton piece goods sold by various cities is tabulated as follows:

	Value Annually Sold
Shanghai	$47,180,000
Wusih	9,765,000
Wuchin	9,516,237
Kiangyin	2,495,000
Nantung	2,503,000
Haimen	1,735,000
Wuhsien	1,486,300
Chitung	790,000
Changshu	504,750
Sungkiang	92,320
Other cities	2,589,000
Total	78,656,607

TRANSPORTATION

Except those consumed locally or in neighboring districts, cotton piece goods produced in the interior cities of Kiangsu Province destined for outside markets are generally transshipped at Shanghai. The following table shows the current freight charges fixed by the China Merchants Steam Navigation Company and the Jardine Matheson Steamship Company:

From Shanghai to	C. M. S. N.	Jardine Matheson
Chinkiang	₮4.50 per ton	₮2.25 per chest
Nanking	6.75 „	2.65 „
Wuhu	6.75 „	3.25 „
Kiukiang	9.35 „	3.65 „
Hankow	9.35 „	3.65 „
Changsha	16.35 „	9.45 „
Chungkiang	not fixed	not fixed
Tsingtao	5.15 per ton	5.50 per ton
Chefoo	5.70 „	6.97 „
Tientsin	13.50 „	16.18 „
Newchwang	10.00 „	——
Dairen	7.70 „	——
Antung	——	——
Ningpo	4.75 „	——
Wenchow	$7.50 „	——
Amoy & Swatow	₮7.30 „	14.52 „
Canton	11.15 „	14.52 „
Hongkong	8.00 „	10.67 „

The freight charged by the railways is as follows:

From Shanghai to:	Freight per 100 catties	
Wuhsien, Wusih and Wuchin	$1.10	
Nanking and Chinkiang	1.20	
Pengpu	3.20	($6.50 for express)
Tungshan	3.50	($7.50 for express)
Tsinan	4.80	
Hangchow	1.20	

PACKING

Cotton piece goods turned out by Kiangsu mills are either packed in wooden cases or in packages. Generally cloth of finer quality or destined for outside markets is packed in wooden cases, while those of coarser quality or only for local consumption, in packages. The number of pieces contained in one case is different in different kinds of cloth. One case of sheetings and white cloth usually contains 50 pieces, drills and jeans, 60 pieces, and cotton velvets and velveteens, 30 pieces. Packages are also of three sizes, 40, 50 and 60 pieces. Each package is protected with bomboo sticks and bound with iron stripes in order to prevent breakage.

MODE OF TRANSACTIONS

Cotton piece goods produced by the weaving mills are sold to either one of the following customers: (1) *Pu hao* (布號).—These are merely commission agents who solicit transactions between the *ke pang* and the mills. (2) Wholesale and retail stores. (3) *Ke pang* (客幫).—These are purchasers of other cities, and the transaction between the *ke pang* and the mills is usually solicited by the latter's canvassers. (4) Dyeing and printing factories.—The piece goods are either bought by these factories and sell them after being dyed or printed at their own profit, or dyed for the mills and received renumerations in return. (5) Sales department of the mills.

The following list shows the cotton weaving mills now operating in Kiangsu together with particulars in regard to their capital, number of workers, number of looms, and annual quantity of output (mills under $10,000 capital being omitted):—

	Location	Capital	No. of Workers	No. of Looms	Annual Outpnt (Pieces)
Shen Hsin Mill No. 1 (申新第一廠)	Shanghai	₹3,000,000	1,150	1,150	491,050
Shen Hsin Mill No. 7 (申新第七廠)	〃	——	447	447	36,500
Pu Yi Mill No. 2 (溥益第二廠)	〃	1,500,000	500	500	——
Shun Hsin Mill No. 9 (申新第九廠)	〃	——	1,000	1,000	291,600
Wing On Mill No. 1 (永安第一廠)	〃	——	1,100	1,298	900,000
Wing On Mill No. 3 (永安第三廠)	〃	——	240	240	230,000
Ta Feng Ching Chi (大豐廢記紡織公司)..	〃	1,500,000	230	224	111,500
Chen Tai (振泰紡織公司)	〃	$1,600,000	420	400	140,000
Hung Chang (鴻章紡織染廠)	〃	₹1,500,000	230	216	65,317
Sean You Zoo (三友實業社工廠)	〃	$2,000,000	1,270	364	850 000 doz. coarse cloth 189,000 pcs. beddings 275,000 pcs. shirtings 65,000 packages clothing
San Min Canvass Factory (三民帆布廠)..	〃	100,000	80	32	6,795
Heng Feng (恆豐紡織新局)	〃	₹1,080,000	612	612	535,210
Tien Sheng (天生)	〃	$ 10,000	—	—	——
Kuang Hua (光華)	〃	1,000,000	463	—	——
Ta Feng (達豐染織廠)	〃	₹ 100,000	870	—	——
Chi Ming (啓明棉織廠)	〃	$ 100,000	130	—	——
Tung Ho (通和)	〃	40,000	290	—	——
Hua Yang (華洋)	〃	50,000	167	—	——
Heng Yu Feng (恆裕豐)	〃	20,000	94	—	——
Chung Chow (滙洲)	〃	50,000	109	—	——
Chin Hsin (錦新)	〃	10,000	30	—	——
Chen Hsin (振新)	〃	20,000	—	—	——

Hung Hsin (鴻新)	Shanghai	34,000	294	—	——
Tâ Shen (大森)	„	14,000	194	—	——
Hung Yu (鴻裕)	„	11,000	141	—	——
Chen Ho (振和)	„	20,000	81	—	——
Chu Chang (聚昌)	„	20,000	—	—	——
Hua Yang (華陽染織廠)	„	50,000	321	170	69,000
Ta Feng Chen Chi (大豐甄記)	„	10,000	114	76	15,000
Chen Ho Feng Chi (振和豐記)	„	20,000	94	64	9,000
Chi Ming (啓明染織廠)	„	100,000	160	43	12 000 pcs. cloth 60,000 pcs. beddings
Yuan Tung (之通)	„	30,000	—	—	——
Kiating Dyeing & Weaving Co. (上海第一織造廠)	„	50,000	122	64	——
A. B. C. Factory (中國內衣織布廠)	„	400,000	511	350	34 000 pcs. cloth 11,200 doz. underwear
Chu Chang (聚昌染織廠)	„	20,000	125	63	20,000
Yuan Yuan (圓圓織造廠)	„	50,000	69	16	30,000 peddings
An Lu (安祿機織廠)	„	20,000	540	270	——
Hung Hsin (鴻新織染廠)	„	33,000	355	298	40,000
Ta Shen (大森染織廠)	„	14,000	260	148	25,000
Kiu Foo (九福布廠)	„	10,000	13	20	1,8000
Tien Shen (天生棉織廠)	„	10,000	36	20	14,400
San Yu (三餘工業社)	„	40,000	35	20	——
Chen Hwa Siang Kee Mill No. 4 (振華祥記第四織布廠)	„	14,000	90	70	2,100
Ta Lung (大隆織布廠)	„	50,000	128	67	18,000
San Sing (三星棉織廠)	„	——	88	—	——
Shun Hsin Mill No. 3 (申新第三廠)	Wusih	——	—	1,476	600,000
Ching Feng (慶豐)	„	——	—	250	262,086

Kuang Chin (廣勤)	Wusih	——	—	50	42,000
Chen Hsin (振新)	"	——	—	250	——
Li Hsin (麗新)	"	602,800	670	650	105,000
Chuan Kung (勤工)	"	40,000	210	400	20,000
Li Hwa (麗華)	"	40,000	240	360	20,000
Ta Sheng (大生)	"	12,000	84	70	3,800
Kuang Hua (光華)	"	10,000	130	150	5,000
Chin Hua (晉華)	"	10,000	242	210	6,000
Hsin Hua (新華)	"	10,500	85	30	7,000
Ta Hua (大華)	"	10,000	55	20	4,000
Mei Yu (美裕)	Kiangyin	39,000	287	162‡	40,000
Heng Chin (恒勤)	"	10,000	78	42‡	10,000
Hua Chen (江陰華澄織布股份有限公司)	"	72,000	11,000	160 iron loom 400 wooden looms	50,000
Chin Kang (勤康)	"	20,000	181	103	37,000
Shen Yuan (慎源)	"	20,000	89	52	18,000
Chin Sheng (勤生)	"	——	65	42	15,000
Kung I (公益)	"	30,000	216	108	30,000
Chen Hsin (振新染織廠)	Wuchin	20,000	179	80	55,000
Li Hua (立華棉織廠)	"	70,000	189	60	54,000
Chiu Cheng (文成)	"	45,000	176	72	50,000
Ta Chen Mill No. 2 (大成染織第二工場)	"	1,400,000	498	180	360,000
Ting Chen (鼎成)	"	26,000	147	50	3,500
Min Hua (民華)	"	50,000	180	74	50,400
Heng Feng Teh Chi (恒豐德記)	"	40,000	251	70 iron looms 12 iron wooden looms	50,000
Li Ta (利達)	"	48,000	140	60	——

‡ iron-wooden looms

I Min (益民)	Wuchin	36,000	122	50	37,620
Li Yuan (利源)	,,	23,000	337	112	82,000
Yu Min (裕民)	,,	30,000	198	76	50,000
Hsieh Cheng (協成)	,,	10,000	150	58	41,800
Yung Chen Kai Chi (永成愷記)	,,	80,000	332	112	100,000
Hsieh Yuan (協源)	,,	30,000	205	64	40,000
Hua Cheng (華成棉布廠)	Sungkiang	10,000	60	50*	4,000 doz. blankets
Li Feng (立豐棉紡廠)	,,	12,000	21	44	15,000
Hsin Feng Yu (辛豐豫)	Changshu	10,000	250	150 iron looms 100 wooden looms	20,000
Tung I (同益)	Chuansha	10,000	86	—	14,100 pcs. cloth 2,100 pcs. cotton serge
San Yu (善餘)	Tsingkiang	10,000	45	35†	6,000
Ta Sheng Mill No. 1 (大生一廠)	Nantung	₹4,000,000	2,955	725	240,000
Ta Chung (大中)	,,	$ 10,000	—	20 iron looms 20 wooden looms	——
Chen Feng (震豐)	Wuhsien	10,000	19	—	30,000
Su Lun (蘇綸)	,,	600,000	3,130	420	137,900
Yuan Shen (源盛)	Nanking	20,000	53	—	——
Ta Feng Heng (大豐恆)	Kiating	20,000	204	70†	16,200
Kiating Dyeing & Weaving Co. (嘉定染織公司)	,,	60,000	297	46 iron looms 50 wooden looms	58,200
Tanyang People's Factory (丹陽平民工藝廠)	Tanyang	20,000	105	40 iron looms 16 hosiery machins	2,000 pcs. cloth 1,500 pcs. crape 2,000 doz. hosiery
Kunshan People's Factory (崑山縣平民工藝廠)	Kunshan	10,000	51	40*	1,900
Ta Sheng Mill No. 2 (大生第二紡織廠)	Chitung	——	—	200	80,000

* wooden looms
† iron-wooden looms

NANKEEN

The nankeen industry in Kiangsu Province is generally pursued by peasant women who take up this work as a secondary occupation in their spare time. It is made on the old-style wooden looms, and has a very firm texture and great durability. The length of each piece varies from 10 to 50 feet, and the width from 9 to 15 inches. Before the introduction of cotton spinning industry the nankeen was woven with hand-spinned yarn but after the development of modern cotton mills, yarns of 10, 12 and 16 counts, costing from Tls. 140 to Tls. 170, are used.

Nankeens produced in Kiangsu is under a host of names, and the following is a list of some of the most common varieties together with their respective length and width:—

	Width (in.)	Length (ft.)	Place of Production
Li pu (利布)	9.1	20	Pootung, Shanghai
Che lo wen ko tze ... (車羅紋格子)	15.0	20	Punan (滬南), Shanghai
Che ma yi liu tiao.. (車螞蟻柳條)	15.0	20	"
Chin sui pu (清水布)	11.6	18.4	Shanghai
Tung tao (東套)	9.6	16.8	Pootung, Shanghai
Pei sheng pu ..... (白生布)	9.0	10.4	Pintien (品點), Shanghai
Yin hua pu (印花布)	11.0	19	Shanghai
Chung chi pu ..... (中尺布)	10.0	60	Tsungming
Chin chuang pu .... (青莊布)	9.0	70	"
Chih ta pu (赤大布)	12.0	52	Paoshan
Tao pu (套布), red or white	10.0	17.2	"
Chung tao (中套), red or white	10.0	16.5	"
Hsia tao (下套), red or white	9.5	16.0	"
Mao pao pao (毛寶袍)	11.5	30	"

Tui tze lan tao .... (對子藍套)	10.0	17	Paoshan
Yueh pu (月布)	9.0	28	Kiating
Shan chin pu ..... (上青布)	9.0	15	„
Ta pu (大布)	12.5–13.7	50	Nantung
Hsiao pu (小布) ...	8.1–8.2	25	„
Chiang pu (江布) ..	7.5	18	Kiangyin
Yang fang (洋放)...	8.3	24	„
Kou pu (扣布)	—	—	Soochow

OUTPUT

Owing to the handicraft nature of the industry the accurate figure for annual output is not available. The following table is an estimate based on the results of investigation conducted in October, 1932:—

	Kind of Nankeen Produced	Annual Output
Tsungming	Chung chi pu, and chin chuang pu	300,000 pcs
Taitsang	Ta pu and hsiao pu	20,000 „
Chinkiang	Striped and checkered cloths ...	4,600 „
Chinshan	——	8,000 „
Changshu	Tu pu (土布) and fang chi pu (放機布)	3,400,000 „
Wuchin	——	120,000 „
Kiangpu	——	3,000 „
Haimen	——	450,000 „
Luho	——	3,000 „
Suchien	——	80,000 „
Hsiaohsien	——	24,000 „
Suining	——	280,000 „
Peihsien	——	100,000 „
Kaoshun	——	65,000 „
Tsingkiang	——	55,124 „
Chitung	——	200,000 „

MARKET

Aside from local consumption, the bulk of nankeen produced in Kiangsu Province is shipped to either one of the following places: (1) Hongkong, Singapore and F.M.S., Netherlands India, British India, and Philippine Islands, (2) Manchuria, and (3) other ports. The amount con-

sumed by the first group is by far the largest, and the following table, compiled from the Customs returns, shows the exports to these places during the past three years ending 1931 (though these figures are for whole China, but the export from Shanghai alone occupies over 80 per cent):—

	1929 Piculs	Hk. Tls.
Hongkong	15,271	1,012,308
Singapore, and F.M.S.	22,352	1,574,459
Netherlands India	264	18,789
British India	402	34,273
Philippine Islands	1,590	96,664
Total	39,968	2,742,753

	1930 Piculs	Hk. Tls.
Hongkong	15,691	1,130,439
Singapore, and F.M.S.	19,707	1,379,432
Netherlands India	321	21,775
British India	226	16,862
Philippine Islands	1,642	114,940
Total	127,798	2,677,644

	Piculs 1931	Hk. Tls.
Hongkong	19,975	1,490,034
Singapore, and F.M.S.	19,007	1,614,750
Netherlands India	1,492	126,820
British India	1,685	140,683
Philippine Islands	1,921	163,285
Total	45,378	3,637,037

Formerly Manchuria is also one of the principal markets of Kiangsu nankeens. During the prosperous days the annual shipment from Shanghai amounted to 300,000-400,000 packages, selling from Tls. 30 to Tls. 40 per package. Although the competition of Japanese goods curtailed the market considerably, yet after 1930, owing to the rise of the Japanese yen the Manchurian market was regained by the Kiangsu nankeens. But after the September 18th incident in 1931, the export of nankeen to that part of the country had entirely stopped. The following table shows the amount of nankeens shipped to Manchurian ports during the past three years ending 1931:

	1929	
	Piculs	Hk. Tls.
Antung	11,492	820,379
Dairen	37,400	2,070,695
Newchwang	51,217	3,329,105
Aigun, Hunchun and Lungching-tsun	21	1,289
To All Ports	167,637	10,607,550

	1930	
	Piculs	Hk. Tls.
Antung	21,580	1,499,337
Dairen	29,387	1,626,290
Newchwang	51,421	2,313,932
Aigun, Hunchun and Lungching-tsung	6	320
To All Ports	164,592	9,659,559

	1931	
	Piculs	Hk. Tls.
Antung	26,660	1,615,717
Dairen	27,923	1,681,945
Newchwang	25,579	856,845
Aigun, Hunchun and Lungching-tsun	11	480
To All Ports	164,419	10,924,062

In addition to the two leading markets mentioned above, a considerable portion of the products is also shipped to Kuangtung, Kuangsi, Fukien, Anhui and Chekiang. Except those destined for Anhui and Chekiang, which is always transported by railways and overland routes, the shipments made to other ports may be seen from the following Customs figures:—

	1929	
	Piculs	Hk. Tls.
Canton	21,144	1,332,084
Wenchow	15	900
Yangchow	7,856	471,360
Chungchow	8,335	504,934
Foochow	4,194	249,626
Pakhoi	2,856	229,185

	1930	
	Piculs	Hk. Tls.
Canton	23,952	1,836,545
Wenchow	52	3,120
Yangchow	11,004	660,240
Chungchow	7,560	543,600
Foochow	2,659	160,870
Pakhoi	4,354	345,477

	1931	
	Piculs	Hk. Tls.
Canton	23,153	1,825,852
Wenchow	10,831	840,370
Yangchow	14,018	841,080
Chungchow	9,410	752,800
Foochow	11,038	671,659
Pakhoi	6,089	484,745

Each district has its own market for nankeens it produced, and the following table shows the amount of annual output, market price per piece and their respective markets for various districts:—

	Principal Markets	Annual Output (Pieces)	Price per Piece
Shanghai	Hongkong, Manchuria, Chekiang and Anhui ..	250,000	₮ 0.30–₮ 1.70
Paoshan	Kuangsi and Straits Settlements	1,800,000	0.40–4.40
Tsungming	Antung and Tsingtao	30,000	0.70
Kiating	Kuangtung, Kuangsi and other Kiangsu cities	6,000	5.80–1.06
Taitsang	Local	10,000	$1.20
Chinkiang	Local	——	2.00
Chinshan	Local	8,000	0.40–0.50
Changshu	Shanghai and Northern Kiangsu cities	——	0.70
Wuchin	Anhui and Northern Kiangsu cities	——	—
Kiangpu	Anhui, Chekiang, Kuangtung, Kuangsi, and Manchuria	3,000	3.00–5.00
Nantung	——	4,000,000	0.90–1.40
Haimen	Honan, Hunan and Yinkow	200,000–300,000	1.50
Chitung	North China, and Northern Kiangsu cities ..	100,000	1.50
Tsingkiang	Local and Northern Kiangsu cities	40,000	1.50
Kaoshun	Lishui, Kuyung and Nanking	40,000–50,000	1.80
Luho	Local	3,000	3.00
Suchien	Local	——	2.50
Hsiaohsien	Local	——	1.10
Suining	Local, Linpu (鎮 普) and Minkwang (明 光) ..	200,000	2.70
Peihsien	Local	100,000	2.50

Similarly every kind of nankeen has its own market, and the following table shows the place of production, consumption, annual output and price per piece of various kinds of nankeen produced in Kiangsu Province:—

	Place of Production	Place of Consumption	Annual Output (Pieces)	Price per Piece
Chi ta pu	Paoshan	Swatow	5,000	₮4.40
Tao pu (all kinds)	"	Swatow, Kuangtung and Kuangsi	110,000	0.40–0.60
Mao pao pao	"	Kuangtung, Kuangsi and Straits Settlements	1,500,000	1.40–2.00
Tui tze lan tao	"	Kuangsi	200,000	0.84
Li pu	Shanghai	Hongkong	10,000	0.73
Cher lo wen ko tze	"	Chekiang and Anhui	—	1.70
Cher ma yi liu tiao	"	" "	—	1.65
Chin sui pu	"	Manchuria	80,000	0.72
Yin hua pu	"	"	50,000	0.72
Tung tao	"	"	40,000	0.60
Pei shen pu	"	"	75,000	0.32
Tu pu (土布)	Tsungming	Antung and Tsingtao	30,000	—
Yueh pu	Kiating	Kuangtung and Kuangsi	4,000	0.58–0.96
Shan chin pu	"	" "	2,000	1.06
Pei ta pu	Nantung	Manchuria, Nanking, Anhui, Chekiang and Northern Kiangsu cities	3,500,000	—
Hsiao pu (Blue)	"	Wuhu	320,000	—
Hsiao pu (White)	"	Chekiang, Fukien, Anhui, and Northern Kiangsu cities	1,000,000	—

MODE OF TRANSACTIONS

The transactions of nankeens in Kiangsu Province is handled by *pu chuang* (布莊), which is usually a private proprietorship with a capital of from a few thousand dollars to twenty thousand dollars. It employs a manager, an accountant, and several assistants in charge of receipts, delivery, measuring and examination of the goods. The manager usually gets a monthly salary of $50 to $60, assistants, $25 to $40, and the accountant, $20. Besides board and lodging, as in Nantung, they are also entitled to a bonus of 10 per cent of the annual net profit.

Owing to the difference in business relations, *pu chuang* in Kiangsu is divided into several groups. In Shanghai, of the 45 comparatively large firms, four principal groups are divided, namely, the Kuangtung group, which is most powerful, the Newchwang group, the Antung group and the Fukien group. In Nantung there are over 150 *pu chuang* in operation. They are divided into three groups: (1) *Kuan chuang* (關莊) of which there are over 10 firms under this group, deal chiefly with Manchurian buyers. (2) *Chin chuang* (京莊) of which there is about 40 in number enaged in shipping goods to Nanking, Pukow, and Tangtu (當塗), Wuhu, and Tsaishih (采石) of Anhui Province. (3) *Hsien chuang* (縣莊), over 90 in number, act merely as a middleman between the local weavers and the purchasing agents of the neighboring districts. Their markets extend to Kucheng, Hsinhua, Founing, Kaoyu, Chinkiang, Paoying, Tungtai, and Kiangtu in the same Province, Tunchi (屯溪), Chiki (績溪), Kimen (祁門), and Huaining (淮寧) in Anhui Province, Chinhua and Lanchi (蘭谿) in Chekiang Province, and Yushan (玉山) and Kuangfeng (廣豐) in Kiangsi Province.

In collecting nankeens, *pu chuang* either despatch purchasing agents to the various villages or waiting for the weavers to come to sell their output; while in selling, the cargo is either disposed off through the agents stationed in Shanghai and receiving a commission charge in return or directly to purchasers through parcel posts for far away customers and to the latter's agents for local buyers.

CHAPTER II

SILK INDUSTRY

INSPITE of its past glorious history, the Chinese silk industry is today in a deplorable state. A thousand and one causes of the decline of the industry may be given, but it is not necessary here. Kiangsu Province, being one of the most important silk producing centers, as well as the center of silk exporting trade and of silk weaving industry, has been most severely hit. Although measures have been adopted in remedying the situation, little has been achieved in brightening the future of the trade. The following paragraphs give a survey of the conditions of both the silk filature and silk weaving industries in the later part of 1932.

REELING

The reeling of raw silk by modern machinery in Kiangsu Province dates back to 1880 when a group of Italian merchants opened a factory in Shanghai and trained Chinese workers in the new method of reeling silk by iron machines. The new device was soon found popular, and in 1881, a Chinese-owned filature, known as Kung Ho Yung (公和永), was established by Huang Cho-ching (黃佐卿) on the north bank of Soochow Creek. It was equipped with only 100 reeling machines, and after a short period of operation, was forced to close down. Since then, although a number of filatures came into existence, the industry did not show any marked improvement until after the advent of the Republic. The following table shows the chronological development of the silk reeling industry in Kiangsu Province:

	SHANGHAI		WUSIH		WUSIEN & CHINKIANG		TOTAL	
	No. of Filatures	No. of Reeling Machines	No. of Filatures	No. of Reeling Machines	No. of Filatures	No. of Reeling Machines	No. of Filatures	No. of Reeling Machines
1890	5	—	—	—	—	—	5	—
1917	70	18,386	8	2,531	—	—	78	20,918
1918	68	18,800	—	—	—	—	68	18,800
1919	65	18,306	—	—	—	—	65	18,306
1920	63	18,146	—	—	—	—	63	18,146
1921	58	15,770	—	—	—	—	58	15,770
1922	65	17,260	—	—	—	—	65	17,260
1923	74	18,546	—	—	—	—	74	18,546
1924	72	17,554	—	—	—	—	72	17,554
1925	75	18,298	—	—	—	—	75	18,298
1926	81	18,664	—	—	—	—	81	18,664
1927	93	22,168	—	—	—	—	93	22,168
1928	95	23,534	38	10,430	6	1,544	139	35,508
1929	104	23,582	—	—	—	—	104	23,582
1930	105	25,066	48	14,732	8	1,992	161	41,790
1931	105	25,394	48	15,324	6	1,392	159	42,110
1932	112	25,300	50	14,425	—	—	162	39,732

It should be borne in mind that the increase in the number of filatures and reeling machines does not necessary indicate the growth of the industry, for some filatures are in frequent suspension and some not in full operation. For instance, prior to October, 1930, 62 filatures in Shanghai suspended their operations, and after the January 28th incident in 1931, nearly all the filatures were closed down. Even at present only 63 were re-opened. In Wusih up to the end of August, 1932, the total number of filatures in operation was only 17. So although the number of filatures is on the increase the silk industry of Kiangsu is not very promising at all.

The following table shows some of the particulars of the silk filatures now operating in the Province (November, 1932):—

	Location	Established	Capital	No. of Workers	No. of Reeling Machines	Daily Output (Piculs)
Kuang Yuan (廣源)	Shanghai	1921	——	255	116	——
Yu Feng (裕豐)	„	1922	——	500	228	1.20
Yung Cheng (鏞成)	„	1924	——	465	216	1.25
Tung I (同益)	„	——	——	420	208	1.30
Hsin Chang (信昌)	„	1924	——	1,200	536	3.00
Kung I (公益)	„	1929	——	450	240	1.75
Hsiang Cheng (祥成)	„	1928	——	464	264	1.50
Hsiang Yuan (祥源)	„	1916	——	350	208	1.30
I Chang 3rd (怡昌三)	„	1916	——	420	208	1.00
Pao Tai Shun (寶泰順)	„	1917	——	425	208	1.00
Tung Chang Tai (同昌泰)	„	1919	——	500	240	1.40
Fu Chang Kung (復昌公)	„	1919	——	450	248	1.50
Fu Ho (福活)	„	1919	——	425	208	1.00
Hsia Tai (洽泰)	„	1920	——	430	260	1.30
Yuan Ta (源大)	„	1920	——	381	192	1.50
Cheng Tai (成泰)	„	1923	——	850	432	2.50
Yuan Feng (元豐)	„	1923	——	220	144	——
Ting Chi (鼎記)	„	1924	——	400	200	——
Yung Chi (永記)	„	1924	——	501	288	——
Jen Chang (仁綱)	„	1925	——	469	272	1.50
Fu Hsing (福興)	„	1926	——	370	168	1.00

Feng Tai Shun (豐泰順)	„	1926	——	850	416	2.00
Jui Feng Yu (瑞豐裕)	„	1927	——	450	200	1.40
I Chang 5th (怡昌五)	„	1927	——	420	208	1.00
Jun Chang (潤昌)	„	1927	——	250	180	0.95
Hsiang Feng (祥豐)	„	1927	——	234	234	1.00
I Chang 4th (怡昌四)	„	1927	——	425	208	1.00
Lun Yuan (綸元)	„	1927	——	280	280	1.50
Chia Heng Chi (加恆記)	„	1927	——	475	216	——
I Feng Chen (義豐成)	„	1927	——	590	318	1.60
I Chang Heng (怡昌恆)	„	1927	——	425	208	1.00
Lung Yuan (隆元)	„	1927	——	250	186	0.90
Ho Chi Hsin (和記新)	„	1928	——	378	228	1.50
Hsu Hsiang (緒祥)	„	1925	——	231	192	1.00
Tien I (天一)	„	——	——	420	208	1.30
Chia Tai (嘉泰)	„	——	——	450	230	1.30
Hsieh Chi (協記)	„	——	——	420	208	1.30
Chen Hsing (振興)	„	——	——	450	240	1.20
Yuan Ho (源和)	„	——	——	320	224	1.30
Chun Hsin (春新)	„	——	——	228	120	0.70
Hung Ta (宏大)	„	——	——	520	224	1.60
Chu Hsin (楚信)	„	——	——	450	224	1.45
Hsin Hua (信華)	„	1929	——	290	160	1.00
Yuan Chi (源記)	„	1930	——	880	480	——
Yuan Ho (源和)	„	1914	——	430	224	1.40

Fu Chang (復昌)	,,	1929	——	400	208	1.32
Ning Hsing (寧興)	,,	1929	——	400	208	1.30
Heng Yu (恆裕)	,,	——	——	280	144	1.20
Hung Yu (鴻裕)	,,	——	——	400	216	1.20
Tai Chi (泰記)	,,	——	——	528	240	——
Hsieh Tai (協泰)	,,	——	——	528	240	——
Hsieh Yuan (協源)	,,	——	——	616	280	——
Kung Chi (公記)	,,	——	——	352	160	——
Hsin Chang (新昌)	,,	——	——	616	280	——
Hsing Lun (興綸)	,,	——	——	369	168	——
Ching Wei (經緯)	,,	——	——	616	280	——
Yu Yuan Cheng Chi (裕源成記)	,,	——	——	396	180	——
Kung Yuan (公源)	,,	——	——	440	200	——
Hsieh Yuan Cheng (協源成) ..	,,	——	——	501	228	——
Pao Tai Shun (寶泰順)	,,	——	——	708	322	——
Hsieh Feng (協豐)	,,	——	——	352	162	——
I Ho Chin Chi (怡和謹記)	,,	——	——	127	508	——
Hsing Lun (興綸)	,,	——	——	210	108	0.50
Jui Ho (瑞和)†	,,	1921	——	140	136	0.75
Shu Chang Fu (緒昌祉)†	,,	1921	——	420	208	1.00
Tai Feng (泰豐)†	,,	1922	——	530	260	1.70
Chiu Tai (久泰)†	,,	1925	——	540	260	1.65
Ching Lun (經綸)†	,,	1923	——	340	195	1.50
Heng Chang Hsin (恆昌新)† ..	,,	1925	——	419	208	1.20

Hung Lun (鴻綸)†	„	1925	——	300	400	1.21
Chen Ta (震大)†	„	1926	——	350	160	0.95
Chi Chang Tai (啓昌泰)†	„	1927	——	480	240	1.20
Chin Yun Teh Chi (錦雲德記)†	„	1927	——	230	128	0.78
Chun Sheng Fu (駿盛福)†	„	1927	——	600	240	1.50
Chu Hsin (楚信)†	„	1927	——	400	212	1.20
Yung Lun (永綸)†)	„	1927	——	470	200	1.20
Hsin Hsin (新新)†	„	1927	——	435	216	1.00
Hsiang Ho (祥和)†	„	1927	——	232	136	0.75
Ting I (鼎義)†	„	1928	——	320	224	1.20
Yu Lun (裕綸)†	„	——	——	450	258	1.50
Lun Ta (綸大)†	„	——	——	346	184	1.45
I Chang Kun (益昌公)†	„	——	——	250	160	1.00
Shu Chang Shen (緒昌愼)	„	——	——	420	208	1.20
Lung Chi (隆記)†	„	1922	——	350	208	1.30
Chi Chang Yung (啓昌永)† ...	„	——	——	600	140	1.30
Ting Chang Shen (鼎昌愼)† ..	„	——	——	420	208	1.20
An Yu (安裕)†	„	——	——	402	238	1.50
Cheng Hsiang (正祥)†	„	——	——	432	191	1.00
Ta Sheng (大勝)†	„	——	——	348	208	1.00
Teh Feng (德豐)†	„	——	——	360	216	1.40
Chin Tai (晉泰)	„	——	——	290	144	1.00
Chiu Shun (久順)†	„	——	——	250	144	0.80
Heng Chin (衡京)†	„	——	——	340	208	0.90

I Chang (怡昌)†	,,	—	—	440	240	1.40
Chin Feng (慶豐)†	,,	—	—	450	212	1.30
Pao Ching (寶經)†	,,	—	—	440	338	2.00
Shen Yuan Hsin Chi (生源鑫記)†	,,	—	—	280	280	1.50
Hsieh Hsing (協興)†	,,	—	—	250	160	1.00
Ting Yuan (鼎源)†	,,	—	—	990	512	2.90
Yun Lun Chun Chi (永綸順記)†	,,	—	—	500	212	1.30
Kai Tai (開泰)†	,,	—	—	400	232	1.20
Yuan Feng (元豐)†	,,	1929	—	470	240	2.00
Yung Tai Hsing (永泰興)†	,,	—	—	420	160	0.85
I Chang Kung Chi (益昌公記)†	,,	—	—	386	200	1.25
Yu Chang Jen (裕昌仁)†	,,	—	—	300	160	1.20
Yung Yuan (永元)†	,,	—	—	300	158	1.20
Chin Chang Kung (勤昌公)† ..	,,	—	—	500	236	1.50
Chin Lun (晉綸)†	,,	1922	—	330	160	1.20
Jui Lun (瑞綸)†	,,	1928	—	300	160	1.20
Ta Lun Company (大綸公司)†	,,	1917	—	480	200	1.30
Ta Lun (大綸)†	,,	—	—	300	150	1.20
Chin Tai (晉泰)†	,,	1929	—	450	240	1.50
Yu Chang (裕昌)	Wusih	1901	$40,000	825	330	—
Ting Chang Hsing Chi ..... (鼎昌鑫記)	,,	1930	42,000	1,280	512	—
Yung Tai No. 1 (永泰第一) ..	,,	1923	$60,000	1,230	492	—
Yung Tai No. 2 (永泰第二) ..	,,	1909		1,025	410	—

Chien Sheng (乾昇)	,,	1910	₹20,000	1,420	568	—
Chien Tai (乾泰)†	,,	1919	$10,000	640	272	—
Ho Feng (禾豐)	,,	1929	5,000	865	336	—
Jui Chang (瑞昌)	,,	1928	10,000	870	318	—
San Tai (三泰)	,,	1920	₹10,000	690	276	—
Tung I (同益)†	,,	1929	20,000	360	144	—
Hou Shang (厚生)	,,	1930	40,000	530	212	—
Chin Ta Yu Chi (錦泰餘記)† ..	,,	1929	₹10,000	720	288	—
Chin Ta Yung Chi (錦泰永記)†	,,	1929	$ 5,000	360	144	—
Hui Sheng No. 1 (惠生第一) ..	,,	1927	₹42,000	655	262	—
I Feng (義豐)†	,,	1918	126,000	620	248	—
Yuan Chi (元記)†	,,	1927	60,000	640	256	—
Yuan I (源益)	,,	1928	30,000	610	244	—
Teh Yuan (德源)†	,,	1928	30,000	620	248	—
Chien Feng (乾豐)†	,,	1926	56,000	680	256	—
Chen I (振益)	,,	1910	10,000	720	288	—
Chen I Hsieh (振藝協)†	,,	1910	70,000	770	308	—
Yuan Kang (源康)†	,,	1907	$10,000	825	330	—
I Chang (怡昌)	,,	1923	10,000	960	384	—
Min Feng (民豐)	,,	1929	30,000	1,060	424	—
Hsieh Sheng (協勝)	,,	1925	42,000	880	352	—
Yu Feng (裕豐)†	,,	1922	50,000	680	272	—
Jui Lun (瑞綸)†	,,	1927	63,000	720	288	—
Teh Feng (德豐)†	,,	1920	42,000	930	272	—
Teng Feng (澄豐)†	,,	1929	70,000	800	320	—
Teh Ta Yu Shen Chi† ..... (德大裕慎記)	,,	1919	70,000	1,200	480	—

Yung Yu (永裕)†	〃	1928	56,000	1,200	480	—
I Sheng (義生)†	〃	1928	40,000	660	264	—
Sheng Yu (盛裕)†	〃	1928	40,000	800	320	—
Heng Chang (恒昌)†	〃	1928	42,000	520	208	—
Tung Feng (同豐)†	〃	1929	30,000	400	160	—
Ying I (永益)†	〃	1928	30,000	640	256	—
Yeh Chin (業勤)†	〃	1927	28,000	300	120	—
Ta Feng (大豐)†	〃	1929	42,000	780	312	—
Chen Lun (鎮綸)†	〃	1917	70,000	360	144	—
Chen Feng (振豐)† ..... Tai Feng (泰豐)†	〃	1930	20,000	760	304	—
Yu Sheng Feng (餘盛豐)†	〃	1912	42,000	830	232	—
Chien Yuan (乾源)†	〃	1923	50,000	660	264	—
Fu Cheng (益成)†	〃	1928	40,000	660	264	—
Jun Teh (潤德)†	〃	1928	42,000	600	240	—
Yung Ta (允大)†	〃	1930	20,000	560	224	—
Lung Chang (豐昌)†	〃	1908	—	820	328	—
Fu Lun (福綸)†	〃	1919	—	620	248	—
Hui Yuan (滙源)†	〃	1929	—	520	208	—
Ta Cheng (大成)†	〃	—	10,000	640	256	—
Chui Lun (萃綸)†	Chinkiang	1896	$40,000	426	200	160*
Wei Lun† (偉綸)	Wuhsien	—	—	—	—	—
Chen Feng (震豐)	Shentseh	1929	₹40,000	950	116	168*
Yen Ching Hsiang (顏慶祥)† ..	Wuhsien	—	—	—	—	—
Hsing Yeh (興業)†	〃	—	—	—	—	—

†In Suspension. *Annual figures

From the above table the distribution of silk filatures in Kiangsu may be summarized as follows:

	No. of Filatures	No. of Filatures Now in Operation	No. of Reeling Machines	No. of Reeling Machines now in Operation
Shanghai	112	63	25,307	14,770
Wusih	50	16	14,425	5,584
Wuhsien	2	—	—	—
Chinkiang	2	—	—	—
Wukiang	1	1	116	116
	167	90	39,848	20,470

CAPITAL

As building and machinery can both be rented, so the actual capital needed to open a silk filature is very small. According to a rough estimate the amount of capital needed for every reeling machine, both fixed and liquid, is Tls. 420. Thus for a filature equipped with 300 reeling machines an aggregate of Tls. 126,000 is necessary for the capital. In case both the building and machines are rented from others, a sum of Tls. 48,000 is sufficient to start a filature of 300 reeling machines.

MACHINERY

The most important machinery of a silk filature is the reeling machine, which is either imported or made by Chinese ironworks. In Shanghai the Chinese made and the Italian type are the most popular. Among the Chinese made machines, the products of Yiao Chin Chi (姚金記), Yu Chang Sheng (裕昶生), Chun Chang (釣昌), Huan Chiu (寰球), Chu Ya (鉅亞), Shen Chang (申昌), Chang Hung Sheng (張洪昇), Hsieh Hsing (協興), Chin Chang (錦昶), and Chien Ken Chi (錢根記) are most commonly used. In Wusih those filatures founded before 1916 are all equipped with imported machines, costing from Tls. 120 to Tls. 130 each, while those founded after 1916, machines turned out by local ironworks such as Kung I (工藝) and Feng Shun Chang (馮順鍠) are used.

Distribution of reeling machines in Shanghai and Wusih are tabulated as follows:

	No. of Filatures in Shanghai	No. of Filatures in Wusih	Total
Under 100	—	1	1
101-200	40	5	45
201-300	61	21	82
301-400	4	16	20
401-500	4	5	9
501-600	3	2	5
Over 601	—	—	—
Total	112	50	162

WORKERS

According to a recent investigation, the total number of workers employed in all the filatures in Shanghai is 48,345, while that in Wusih, 37,260. Distribution among various filatures in these two places is as follows (figures for other cities being unavailable) :—

	No. of Filatures in Shanghai	No. of Filatures in Wusih
Under 100	—	—
101-200	1	—
201-300	22	1
301-400	27	4
401-500	41	—
501-600	11	5
601-700	3	16
701-800	1	9
801-900	2	6
901-1,000	2	2
Over 1,000	2	7
Total	112	50

As to wages, a Shanghai filature worker receives over $0.50 a day, while that for a Wusih worker, $0.40. In both cities, the working time being 11 hours a day.

RAW MATERIAL

The annual consumption of cocoons in Shanghai and Wusih filatures is estimated at 393,000 piculs, of which 253,000 piculs are consumed in Shanghai, and the remaining 140,000 piculs in Wusih. Cocoons consumed in Shanghai are

mostly obtained from Chekiang Province. According to the investigation made by the Shanghai Bureau of Inspection and Testing of Commercial Commodities, cocoons obtained from various cities, in percentage, are as follows:

	Percentage
Kashing	22
Hangchow	19
Huchow	17
Shaohing	11
Haining	6
Pinghu	3
Other cities	20

In Wusih the cocoons used are mostly of local product. In a normal year the total production of fresh cocoons in Wusih is 200,000 piculs, including 160,000 piculs of spring cocoons, 20,000 piculs of summer cocoons, and 10,000 piculs of autumn cocoons. The amount of dried cocoons annually produced is over 62,000 piculs, of which about 30 per cent is shipped to Shanghai, and about 40,000 to 50,000 piculs are consumed locally. But this figure supplies only one-half of the actual need, and the amount wanting is made up from cocoons of Wuchin, Kiangyin, Chintan, Ihsing, Liyang, Changshu, Yangchung and Nanking. The average price for dried cocoons in Wusih in 1932 was only 80-90 taels per picul as compared with the Tls. 250 per picul in 1924.

PRODUCTION

The production process involved in silk reeling usually starts with cleaning, which includes the removing of the loose coverings, sorting, boiling, which lasts from five to ten minutes, reeling, testing, and packing.

The average production capacity of filatures in Shanghai and Wusih is from 8 to 12 ounces per machine per day. The annual production of all Shanghai filatures at an average of 9 ounces per machine per day and 300 working days in a year, is estimated at 42,700 piculs, and that of Wusih filatures, 24,500 piculs. Distribution of production capacity among various filatures is as follows:—

Annual Production	No. of Filatures in Shanghai	No. of Filatures in Wusih
Under 100 piculs	—	—
101-200	2	—
201-300	21	4
301-400	55	6
401-500	24	19
501-600	3	13
601-700	—	2
701-800	3	1
801-900	3	4
901-1,000	1	1
Over 1,000 piculs	—	—
Total	112	50

According to an estimate, the actual output of various filatures is much less than those estimated above. For example, the average number of filature in Shanghai in operation during 1932 was 60. If the output of each filature is assumed at 1½ piculs a day, the annual output ought to be 32,400 piculs. On the other hand the export of raw silk from Shanghai during the same year amounted to 39,517 bales, and from this figure we must deduct 13,194 bales of old silk, so the actual amount of new silk exported was 26,323 bales. If we add the 3,000 bales of new silk which is in stock in Shanghai, the total production of raw silk in Kiangsu during 1932 was about 29,000 bales.

Generally the actual cost for a picul of raw silk exported is about Tls. 800, of which Tls. 600 are for cocoons, Tls. 150 for reeling expenses, and Tls. 50 for export duty, freight, insurance and commissions for agents. But the average market price in 1932 was only about Tls. 600 per picul. Thus by selling every picul of silk a loss of Tls. 200 is incurred. For the purpose of remedy, the Government has granted a subsidy of Tls. 100 for every picul of old filature silk exported abroad. In addition the Government has also abolished the Silk Loan Sinking Fund Surtax (Tls. 21.90 per picul) and the export duty (Tls. 17.21 per picul), and by this way the burden of the producers is greatly reduced.

MARKET

Raw silk produced in Kiangsu and destined for foreign countries is chiefly composed of white filature silk and silk reeled from doupions. The United States is the largest consumer of raw silk produced in this Province, with France, Italy, Great Britain, Japan, India and Turkey next in importance. The following table shows the export figures during the last two years:—

	To Europe (Bales)	To America (Bales)	To India (Bales)	To Other Countries (Bales)	Total (Bales)
White Filature Silk:					
June, 1930-May, 1931	16,502	18,033	21	80	34,636
June, 1931-April, 1932	5,916	7,878	47	256	14,097
Silk Reeled from Doupions:					
June, 1930-May, 1931	528	2,164	1,100	358	4,150
June, 1931-April, 1932	97	1,155	792	84	2,128

The price of filature silk produced in Kiangsu also showed a sharp decline. The following table shows the price of high class filature silk quoted in Shanghai, Lyons and New York during the first six months in 1932 with corresponding figures for 1931 as comparison:—

			Shanghai (Per Picul)	Lyons (Per Kilogram)	New York (Per Pound)
			Tls.	Fr.	U.S.$
January	1931	.....	1,274	195	3.17
„	1932	.....	1,002	164	2.64
February	1931	.....	1,280	185	3.05
„	1932	.....	900	165	2.85
March	1931	.....	1,280	196	3.31
„	1932	.....	960	156	2.73
April	1931	.....	1,196	180	3.01
„	1932	.....	868	136	2.39
May	1931	.....	1,145	167	2.80
„	1932	.....	733	114	2.01
June	1931	.....	1,180	173	2.95
„	1932	.....	650	110	1.76

TRANSPORTATION

Raw silk produced in interior cities is shipped to Shanghai for export. Generally cocoons are transported to Shanghai by boats, while raw silk, by railway. The freight charge for silk is $3.50 per picul, and that for cocoons, $0.90 per picul.

For export abroad only the Whangpoo Conservancy Tax, which amounts to Tls. 1.50 per Tls. 1,000 worth, is collected. In addition the exporter must pay an insurance fee of Tls. 0.75 per picul in order to avoid risks on the way. Silk imported into the United States is exempt from import duty, while into France, a duty of 12 per cent *ad valorem* is imposed. The following table shows the freight per picul charged by the P. & O. Steamship Company as effective from April 1, 1932:

To	White and Yellow Raw Silk	Wild Silk and Doupion Silk	Surcharge
Algiers, Tunis, Tangiun, Tripoli, Kenitra	₹27.80	₹32.10	₹0.26
Genoa (Direct), Hamburg. London, Marseilles, Naples (Direct)	21.00	16.25	0.26
Lyons (Via Marseilles or Geona)	23.80	18.10	0.26
Malta and Gibraltar	21.00	——	0.26
Manchester (Via London)	25.20	20.45	0.26
Milan (Petite Vitesse) ..	23.95	19.25	0.26
Milan. (Petite Vitesse)	23.95	19.25	0.26
Moscow	32.50	27.80	0.26
Naples (Via Marseilles)	24.40	19.65	0.26
New York	26.75	18.90	0.26
Odessa	31.50	25.20	0.26
Paris (Via Marseilles) ..	32.00	——	0.26
Venice (Via Port Said) ..	24.00	19.65	0.26
Alexandria	24.15	19.30	0.26

COCOON COLLECTION

As stated above cocoons consumed by Kiangsu silk filatures are obtained mainly from Chekiang and local farmers. Cocoon season in Chekiang is comparatively earlier than that of Kiangsu, so collectors usually first go to Hangchow, Kashing, Hsiaoshan, Pinghu, Chuchi, and other districts in Chekiang Province, and in return trip, such cities as Wusih, Wuchin, Kiangyin, Liyang, and Chintan are visited. In collecting, agents of the filatures do not approach the farmers directly but through the cocoon *hong* (繭行), who collect fresh cocoons from farmers and sell them to the purchasing agents of the filatures after having the cocoons thoroughly dried over a fire. But it is not infrequent to find a purchasing agent of a silk filature buying fresh cocoons directly from the

farmers and do the drying by themselves. Before purchasing a general price is fixed by the purchaser and cocoons of different quality are bought with this average price.

EXPORT OF RAW SILK

Raw silk is exported abroad either indirectly through foreign firms, which are 50 in number in Shanghai, or directly through Chinese firms. In 1929, there were four such Chinese firms operating in Shanghai, namely, Yung Tung (通通), Hu Lin (虎林), Wei Cheng (緯成) and Hua Tung (華通). But at present only Yung Tung is still in operation, while all the others were suspended.

The transactions between the silk filatures and the foreign exporting firms are conducted through a class of merchants known as *ssu hao* (絲號), which are merely middlemen or commission agents. The *ssu hao* has also its own godowns for the storage of raw silk, and in case the sellers meet a financial difficulty, a loan may be obtained from the *ssu hao* with the silk in storage as security. After receiving a consignment from the filatures, solicitors carrying samples are sent out by the *ssu hao* to various foreign firms to get the price the latter offered. When the samples are found satisfactory by the foreign firms and the price agreed upon by the silk merchants, the deal is closed.

Raw silk is divided by the foreign firms into seven grades, that is, Grand Double Extra, Double Extra, Extra A, Extra B, Extra C, Good A, and Good B. After the cargo is delivered to the godowns of the foreign firms, a further testing of its quality is conducted to see whether it agrees with the sample submitted. After this, an official weight, that is, the weight of silk containing a standard percentage of water, is fixed before the officials of the Raw Silk Testing Department of the Bureau of Inspection and Testing of Commercial Commodities. Then the price is fixed and as a usual rule, the price is collected by the solicitors of the *ssu hao* on the day before the silk is actually exported. In paying the cost, the packing and testing expenses are deducted by the foreign firms, and in turning over the money to the silk merchants, a further deduction is made by the *ssu hao* as the commission charges and storage fees.

WEAVING

Though for thousands of years, silk has been one of the principal materials for clothing purpose, silk weaving which employs machinery run by electricity and which is operated in large scale in the form of stock companies began only about a quarter of a century ago. The first modern weaving factory equipped with electrically run machines was the Wu Hua Silk Weaving Mill (物華廠), opened in 1915, which was able to produce goods of very high quality. The success of this pioneer mill had induced many to follow, the Mei Ya (美亞), Mei Wen (美文), Chin Yun (錦雲), and Chen Hua (震華), were opened in the following years. The obsolete machinery and those of older types which had been used by these mills were later abandoned and newer American machinery was installed in their stead. A serious crisis was experienced by the Shanghai mills in the years 1922 and 1923, when the prices of silk rose to an exceptional height, failure of mills being reported from time to time. The situation was eased in the following year, as the prices went gradually back to normal. The Association for Silk Weaving Industry was organised during this period.

An important change was seen about three or four years ago, when rayon was imported into this country in large quantities. The use of rayon in weaving does not require many processes necessary for natural silk, while cost is considerably lower. Weaving mills sprang up in large numbers, all equipped with modern machines, employing artificial silk as their main material. They turn out the cheaper rayon-cotton stuffs which have been popularly used everywhere. During the last year or two, this business has not been good, especially after the Shanghai "war" which has actually rendered many to suspend operation. There are signs, however, of the revival of this industry recently.

PRESENT CONDITION

Silk weaving mills in Shanghai may be classed into two kinds, those engaged in weaving silk stuffs of all descriptions including the popular *ti* (綈), employing both natural

silk and rayon, and those engaged in weaving *ti* only. The number of mills of the first kind now in Shanghai is 146, all being bigger concerns than the second kind of which there are about 357 in operation. (List of names of mills in Shanghai is appendixed at the end of this Chapter.)

Most of the silk weaving mills have but small capital, especially those *ti* weavers, whose liquid capital is very limited. They obtain their raw materials from big silk merchants, for whom they weave the kind of stuffs specified by them as to the designs and other particulars.

MACHINERY

The best machinery used by the mills are imported from America, while Chinese and Japanese made are also very extensively used. Large mills like the Mei Ya and others are equipped with American machines, while Chinese machines manufactured by the Wu Lin Iron Work (武林) of Hangchow, and Wu Hua Iron Work (物華) of Shanghai are equipped in most of the factories weaving *ti*.

Number of Weaving Machines	Number of Mills
1—5	195
6—10	153
11—15	70
16—20	32
21—30	15
31—40	1
41—50	—
51—100	4
101—500	2
500—1,000	—
Over 1,000	1
Total	473

With a few exceptions of some smaller mills which rent their machines at about $20 per machine per month, all factories are equipped with their own machines.

RAW MATERIALS

The principal raw materials needed by the silk weaving mills are silk, rayon and cotton yarn.

Silk.—Natural silk is bought from silk filatures in Shanghai and Wusih, and sometimes from those in Kwangtung and Szechuan, at the price of about Tls. 600 at present. The price of silk bought from Chekiang is about Tls. 500. The lack of uniformity in quality of natural silk has proved to be a great difficulty to be overcome by the buying mills. The varying qualities of raw silk bought from different localities, or in different times, cannot always produce the result required.

Rayon.—Rayon or artificial silk is the principal material for the weaving of *ti*, and is imported from France and Italy. Price of rayon in China is at present around Tls. 335 per box. The amount imported during the recent years has been rapidly increased, and the amount imported during 1931 was 77,135 piculs, valued at 11,022,302 Haikuan taels.

Cotton Yarn.—Cotton yarn is required in weaving the silk-cotton, or rayon-cotton inter-woven fabrics. Yarns used to be bought from Japan or Japanese mills in Shanghai, the apply of fine yarns by Chinese mills is not adequate.

OUTPUT

There is a great variety of silk stuffs manufactured by these mills, the following being the principal kinds, according to the regulations for inspection of silk fabrics of the Shanghai Bureau of Inspection of Commercial Commodities:

1. *Fang ch'ou* (紡綢), made of natural silk or mixture of natural silk and rayon, smooth surface.

2. *Chou fang* (綢紡), a kind of *fang ch'ou* with a crepelike surface.

3. *Fu ch'ou* (府綢), or silk poplin, woven with wild silk, or with silk of the wild worm and the domestic worm combined, smooth surface.

4. *Tan ch'ou* (單綢), made of real silk or real silk and rayon combined.

5. *Shuang ch'ou* (雙綢), made of real silk or real silk and rayon combined.

6. Georgette or *Chiao Chi ch'ou* (喬其綢).

7. Plain satin, or *ping tuan* (平緞).

8. *Chou tuan* (縐緞), or "crepe" satin.

9. *Mao ke* (毛葛), woven with warp of real silk and woof of wool.

10. *Chin* (錦), made of real or artificial silk or both, with designs, heavy.

11. *Ti* (綿), woven with rayon warp and cotton woof.

12. *Hua ssu ke* (華絲葛), made of real or artificial silk or both, plain and fancy.

13. *Hua tuan* (花緞), or fancy sateen, designs of one or more colours.

14. *Yen ling chou* (燕翎縐), interwoven with real and artificial silk, of all colours and silvery white designs.

The total output of silk and rayon products is estimated to be about 450,000 pieces a year, the largest manufacturer being the Mei Ya. The following table shows the quantity of annual output and the number of mills:

Quantity (Pieces)	Number of Mills
100	73
101-200	132
201-300	69
301-400	49
401-500	46
501-600	32
601-700	12
701-800	10
801-900	8
901-1,000	5
1,001-5,000	6
5,001-10,000	2
10,001-50,000	3
50,001-100,000	1
Over 100,000	1
Unknown	24
Total	473

The output is partly consumed in Shanghai, and partly exported to other ports of the country, the most important being Kwangtung, Peiping, Tientsin, Szechuan, Fukien, Shansi, Hankow, Yunnan, etc. Considerable quantity is exported to Hongkong, India, Annam, Siam, Philippines, and places in the East Indies.

According to estimates of those connected with this industry, the approximate annual sales of Shanghai silk and rayon goods amounts to over 40 million dollars. The Mei Ya supplies the market with about five and half million dollars of goods, forming over one-tenth of the total supply. The following table shows the percentage of consumption of silk and rayon goods in different markets:

Shanghai	8.46%
Kiangsu	0.51
Fukien	2.93
Szechuen	4.49
Hankow	2.37
Kuangtung & Hongkong	38.81
Yangtse ports	1.22
Shansi	2.37
Yunnan	0.95
Kwantung Leased Territory	1.03
Tientsin	8.76
Other ports	2.26
Manila	1.37
India	15.12
Annam	8.26

It should be pointed out here that the portion taken by Kuangtung and Hongkong is mostly re-exported to the Straits Settlements:

SILK WEAVING MILLS IN SHANGHAI

Name	Established	Capital	Workers	No. of Machines	Annual Output (Pieces)
Mei Ya (美亞).....	1920	$2,000,000	2,347	—	192,794
Mei Wen (美文)	1927	150,000	280	120	17,000
Chin Yun (錦雲)	1917	100,000	156	87	*18,149 †28,722
Kuo Hua (國華)	—	——	—	54	——
Yu Tung (裕通)	1930	72,000	311	76	42,000
Mei Feng (美豐)	—	——	—	44	——
Chin Lung (金龍) ...	1929	10,000	—	52	7,000
Pao Hua (寶華)	1926	17,000	104	23	17,000
Chiu Ju (九如)	1931	45,000	78	16	8,000
Ta Mei (大美)	1930	20,000	70	—	2,000
Yu Tsun (裕村)	1930	6,000	31	28	4,400
Tien I (天衣)	—	——	—	30	——
Chin Kung (勤工) ...	—	——	—	30	——
Chin I (勤益)	—	——	—	23	——
Ta Wei (大緯)	—	——	—	23	——
Shih Hsin (時新)	—	——	—	24	——
Teh Shih (得師)	1930	30,000	64	23	——
Chen Yeh (振業)	—	——	—	20	——
Yuan Feng (元豐) ...	—	——	—	20	——
Chin Feng (金鳳) ...	—	——	—	10	——
Lieh Feng (烈豐) ...	1930	15,000	108	30	2,500
Kuang Ming (光明)..	1930	40,000	88	18	2,000
Chin Cheng (錦成)..	—	——	—	8	——
Chiu Shun (久順) ...	—	——	—	12	——
Ting Hua (鼎華)	—	——	—	10	——
Chin Hsia (錦霞) ...	—	——	—	12	——
Chi Chang (吉昌) ...	—	——	—	8	——
Chung Hua (中華) ..	—	440,000	556	175	60,000
Tung Ya (東亞) ..	—	——	—	8	150
Nan Yang (南洋) ...	—	——	—	9	450
Chia Lun (嘉綸)	—	——	—	6	——
Min Feng (民豐)	—	——	—	12	360
Hsin Wei (新緯)	—	——	—	6	340
Sheng Chang (聲昌)	—	——	—	12	600
Hsieh Feng (協豐) ..	—	——	—	8	420
Yu Hou (裕厚)	—	——	—	8	640
Chen Ya (震亞)	—	——	—	6	250
San Yuan (三源)	—	——	—	2	180

*(1929). †(1930).

Chen Yu (承裕)	—	——	—	2	50
Chia Ling (嘉陵) ...	—	——	—	4	130
Chia Cheng (嘉成) ..	—	——	—	9	120
Tao Hua (導華)	—	——	—	10	360
Yu Kuang (餘廣) ...	—	——	—	4	300
Yu Chang (裕昌) ...	—	——	—	3	160
Li Hsin (立辛)	—	——	—	2	100
Nan Feng (南豐) ...	—	——	—	3	150
Li Yu (利記)	—	——	—	8	600
Hui Feng (滙豐)	—	——	—	5	300
Shanghai (上海)	—	——	—	23	800
Teh Chang (德昌) ...	—	——	—	18	600
Mei Li (美麗)	—	——	—	5	260
Hsin Ta (信大)	—	——	—	10	500
Min Feng (民豐)	—	——	—	12	700
Chen Huan (震寰) ..	—	——	—	12	——
Tien Hsing (天星) ..	—	——	—	24	600
Fu Li (福利)	—	——	—	12	300
Yung Tai I (永泰益)	—	——	—	17	600
Shanghai Ching Wei Co. (上海經緯公司)	—	——	—	20	1,000
Yueh Hua (月華) ...	—	——	—	4	60
Nan Yang (南洋)	—	——	—	4	200
Hua Feng (民豐) ...	—	——	—	13	600
Min Feng (民豐)	—	——	—	15	800
Wen Hua (文華)	—	——	—	8	500
Heng Fu (恒孚)	—	——	—	4	300
Mei Sheng (美盛) ...	—	——	—	14	800
Tung Hua No. 1 .... (東華一)	—	——	—	8	300
Tung Hua No. 2 .... (東華二)	—	——	—	8	500
Hui Lun (滙綸)	—	——	—	6	340
Sheng Hua (勝華) ...	—	——	—	5	300
Fu Tan (復旦)	—	——	—	17	1,200
Hsing Ya (星亞) ...	—	——	—	18	900
Ming Ya (明亞)	—	——	—	6	180
Mei Lun (美綸)	—	——	—	11	600
Kuang Hua (光華) ..	—	——	—	9	1,000
Ta Hua (大華)	—	——	—	14	500
Yung Hsiang (永祥)	—	——	—	23	600
Fu Hsing (復興)	—	——	—	14	500
Sheng Mei (勝美) ..	—	——	—	12	600
Sheng Ya (勝亞)	—	——	—	15	900
Lung Hua (龍華) ..	—	——	—	8	400
Ta Feng (大豐)	—	——	—	13	450
Chin Lun (錦綸)	—	——	—	5	150

Li Hsing (利興)	—	—	—	3	80
Jih Hsing (日興) ..	—	—	—	4	120
Yuan Chi (源記) ...	—	—	—	4	300
Hsiang Mao (祥茂) .	—	—	—	8	600
Li Kang (利康)	—	—	—	22	800
Hsin Hsing (新興) ..	—	—	—	2	60
Teh Hsin (德新) ...	—	—	—	10	300
Hua Tung (華東) ..	—	—	—	8	500
Ta Lu (大陸)	—	—	—	14	340
Sheng Tan (勝旦) ..	—	—	—	28	900
Li Hsing (立興)	—	—	—	14	600
Yu Sheng (裕生) ..	—	—	—	13	600
Tien Chin (天錦) ...	—	—	—	3	140
Fou Chang (阜成) .	—	—	—	16	500
Hsiang Hsing (祥興)	—	—	—	16	900
Yuan Feng (源豐) ..	—	—	—	30	700
Wan Pao (萬寶)	—	—	—	36	1,000
Sheng Sheng (生生)	—	—	—	10	600
Heng Hsing (恒星) .	—	—	—	22	500
Hsieh Chi (協記) ..	—	—	—	4	150
Hui Feng (惠豐) ...	—	—	—	12	600
Chen Nan (振南) ..	—	—	—	2	60
Wei Feng (緯豐) ..	—	—	—	6	1,100
Chih Ta (志大)	—	—	—	14	400
Ho Chang (合昌) ..	—	—	—	4	200
An Li (安利)	—	—	—	5	150
Hua Lun (華綸)	—	—	—	10	500
Chen Yeh (振業) ..	—	—	—	11	200
I Yu (益友)	—	—	—	6	250
Tien Wei (天緯)	—	—	—	16	100
Ching Yeh (經業) ..	—	—	—	18	350
Tien Fu (天孚)	—	—	—	18	300
Teh Hsin (德新) ..	—	—	—	18	400
Chung Yang (重陽) .	—	—	—	7	600
Ta Cheng (達成) ..	—	—	—	8	360
Hsieh Yuan (協源) .	—	—	—	4	130
Yung Feng (永豐) ..	—	—	—	8	200
Yuan Chi (源記) .	—	—	—	6	——
Ta Tung (大同)	—	—	—	9	700
Hua Chiang (强華) .	—	—	—	12	500
Mei Cheng (美成) ..	—	—	—	6	300
Chih Cheng (志成) .	—	—	—	4	200
" " .	—	—	—	8	600
Yun Chang (雲章) .	—	—	—	3	80
Tien Cheng (天成) .	—	—	—	4	220
Pao Hua (寶華)	—	—	—	20	960
Yu Hsin (裕新)	—	—	—	16	800
Sheng Teh (勝德) ..	—	—	—	30	1,300

TI WEAVING FACTORIES IN SHANGHAI
(September, 1932)

Name	No. of Machines	Output (Pieces)
Tien Jan (天然)	4	100
Huan Chiu (環球)	6	200
Chin Chang Hsiang (錦昌祥)	3	200
Chiu Hsing (九星)	4	120
Yung Hsin (永新)	7	320
Pao Hsin (寶新)	8	280
Cheng Kung (成功)	6	——
Tung Cheng (東成)	13	630
Li Ya (麗亞)	4	——
Ching Yun (慶雲)	3	100
Ta Sheng (大生)	8	400
San Yu (三餘)	5	230
San Li (三里)	4	80
Hsin Yu (信餘)	17	850
Chen I Lin (振益麟)	4	120
Cheng Mei (成美)	5	200
Ya Mei (亞美)	6	200
Ta Chang (達昌)	3	120
Hua Cheng (華盛)	9	350
Mei Sheng (美生)	9	400
Fu Hsin (復新)	4	——
Lung Hua (龍華)	10	500
Shen I (慎益)	7	280
Yung I (永益)	6	240
Tien Fu (天福)	3	100
Chien Shun (乾申)	5	120
Hua Hsing (華興)	11	240
Yuan Li (源利)	9	300
Lun Ta (綸大)	12	700
Jui Lun (瑞綸)	14	900
Hsin Cheng (信成)	9	450
Feng Tai (豐泰)	3	120
Yu Lun (裕綸)	6	300
Mei Ta (美達)	6	200
Sheng Hua (勝華)	5	100
Yung Hua (永華)	12	600
Wei Lo (偉羅)	9	450
Hsiang Chin (祥錦)	3	120
Hsin Mei (新美)	3	150
Tien Yuan (天元)	12	600
Tien Wen (天文)	15	700
Tien Hsing (天興)	7	360

Hua Chang (華章)	3	100
Ching Chang (慶昌)	3	120
Tien Yen (天豔)	2	60
Kun Ming (崑明)	3	90
Hsing Cheng (鑫成)	2	60
Mei Hua (美華)	4	160
Hua Li (華利)	2	60
Tien Lun (天綸)	14	800
Tung I (統一)	8	400
Yun Hua (雲華)	22	1,000
Hsin Hsing (新興)	5	230
Fei Hsia (飛霞)	6	180
Hsieh Lun (協綸)	4	130
Sheng Li (勝利)	3	100
Kuang Hsing (廣興)	4	200
Hsia Hsing (洽鑫)	8	300
Teh Chi (德記)	3	120
Hua Sheng (華蛙)	8	340
Hua Sheng (華蛙)	8	360
Yu Feng (裕豐)	4	160
Ta Ching (大經)	3	150
I Hua (義華)	6	220
Ta Tung (大東)	6	240
Ta Feng (大豐)	3	130
Tien Pao (天寶)	3	100
Chin Hsin (錦新)	10	600
San Yuan (三元)	3	160
Hsing Cheng (興成)	6	180
San I Hsin (三益新)	16	890
Tung Ya (東亞)	6	200
Hsing Hua (興華)	12	500
Hsiang Cheng Chi (祥正記)	6	120
Pei Yang (北洋)	3	160
Hsieh Chang Sheng (協昌盛)	8	260
Tien Cheng (天成)	3	40
Han Keng Sheng (韓庚生)	1	40
Tien Hsiang (天祥)	4	120
Yu Min (裕民)	4	240
Hsia Yun Tang (夏雲棠)	2	80
Kuo Wei (國威)	6	200
Chung Kuo (中國)	8	320
Lun I (綸義)	20	600
Hung Hsing (鴻興)	3	120
Yung Sheng (永盛)	6	180
Heng Feng (恆豐)	11	360
Yu Chang (豫章)	7	250
Li Hua (麗華)	2	60

Hung Hsiang (鴻翔)	3	100
Chang Ching Tang (章慶棠)	1	40
Tien Sheng (天生)	2	80
Chen Yeh (振業)	12	400
Shun Ta Hsing (順大興)	4	120
Hsin I (辛益)	8	300
Wan Chang (萬章)	5	240
San Hsing (三星)	12	460
Pao Hua (寶華)	7	280
Hsin An (新安)	4	120
Jen Tai (仁泰)	3	100
Heng Yu (恒裕)	4	120
Hua Ta (華達)	6	240
Min Hsin (民新)	12	600
Wen Lung (文龍)	4	140
Chiu Cheng Jen (久成仁)	7	300
Chin Chang (勤昌)	4	160
Heng Teh (恒德)	4	240
Yu Cheng (裕成)	3	120
Chi Hsin (奇心)	4	120
Jih Sheng (日昇)	8	400
Yu Cheng (又成)	5	250
Hsing Hua (興華)	12	520
Mei Li (美麗)	2	80
Ssu Cheng (思成)	4	240
Chin Feng (錦豐)	4	140
Tien Hsiang (天祥)	3	120
Tung Fang (東方)	6	230
Ta Yu (大裕)	12	500
Jung Hsing (榮興)	5	———
Mei I (美益)	7	280
Tien Chan (天蟾)	3	120
Teh Hua (德華)	3	100
Pu I (普益)	8	400
Hua Ming (華明)	3	100
Jui Feng Hsiang (瑞豐祥)	2	60
Hua Lai (華來)	11	500
Cheng Kang (承康)	5	240
Hsin Cheng (新成)	12	600
Hsieh Chi (協記)	6	220
Chin Hsin (錦新)	3	———
Yueh Hua (月華)	4	140
San Hsing (三興)	12	500
Chiu Lun (久綸)	7	300
Chin Cheng (錦成)	3	120
Mei Li (美麗)	8	240
Ta Li (達利)	4	120

Li Ho (利和)	4	130
Shun Chang (順昌)	4	120
Tai Lai (泰賚)	4	120
Kuang Chang (廣昌)	7	360
Hua Lai (華賚)	12	280
Chin Lun (錦綸)	4	——
Sheng Ya (勝亞)	5	200
Chih Tung (志同)	4	130
Hsin Tai (信泰)	3	120
Hsieh Cheng (協成)	9	480
Cheng Feng (正豐)	6	230
Mei Cheng (美成)	5	200
Fu Hsin (福新)	4	120
Lien Hua (聯華)	3	120
Yu Ching (餘經)	10	500
Mei Hsin (美新)	13	700
I Hua (義華)	10	500
Sun Yao Ting (孫耀廷)	4	120
Mei Hua (美華)	8	400
Fu Hua (福華)	6	180
Chao Feng (兆豐)	12	500
Yueh Hua (悅華)	5	220
Ming Ming (明明)	8	400
Yü Yuan (餘源)	6	280
Tien Chang (天章)	5	280
Chen Yeh (振業)	9	480
Ching Lun (景綸)	3	150
Tien Chang (天章)	13	700
Li Hua (麗華)	18	800
Hsiang Lun (祥綸)	12	600
Chen Hsia (震霞)	12	600
Tung Sheng (同昇)	16	700
Tien Tien (天天)	8	480
Tien Sun (天孫)	6	230
Yin Wen (茵文)	9	450
Ching Ta (經達)	3	180
Ta Lun (大綸)	12	600
Ta Hsin (大信)	5	250
Chin Lun (錦綸)	7	360
Hsing Yeh (興業)	12	500
Hsieh Chang (協昌)	4	120
Jung Sheng (榮生)	8	300
Tung Hua (通華)	4	120
Jung Tan (榮旦)	7	320
Hsieh Kang (協康)	8	400
Fu Yeh (復業)	3	90

Jui Feng (瑞豐)	4	140
Tien Hsing (天興)	2	80
Chih Cheng (志成)	4	160
Hsin Lun (新綸)	4	180
Chin Hsia (錦霞)	3	130
Tien Fu (天福)	6	230
Yung Hsing (永興)	9	480
Ting Ya (鼎亞)	7	400
Tien Hsiang (天祥)	4	120
Yu Hsin (有新)	3	100
Tung Hua (同華)	4	120
Shen Chang (慎記)	7	360
Shih Li (時利)	2	60
Tien Hsing (天興)	4	140
Wan Hsing (萬興)	3	130
Tien Cheng (天成)	4	140
Hua Hsing (華興)	4	160
San I Hsin (三一新)	12	600
Kung Chang (公章)	8	330
Ching Lun (景綸)	2	90
Tien Hsin (天新)	8	450
Cheng Sheng (震聲)	21	900
Li Hsing (立興)	2	60
Chien Yuan (乾元)	11	240
Chen Chang (振記)	19	800
Yun Hsia (雲霞)	20	760
Chin I (錦藝)	2	60
Chin Lun (錦綸)	1	——
Chin Hua (錦華)	11	300
Cheng Feng (振豐)	4	110
Hsin Chang (新昌)	2	50
Yung Sheng (永盛)	6	150
Li Ya (麗亞)	3	90
Kuan Ya (冠亞)	8	180
Jen Ho (仁和)	2	150
Chin Sun (錦孫)	10	500
Chih Cheng (志成)	8	400
Hung Hsiang (鴻祥)	6	140
Hung Hsing (洪興)	14	300
Mei Lin (美麟)	2	60
Hsieh Hsing (協興)	3	50
Chien Chung (建中)	1	——
Heng Hsin (恒新)	10	300
Tien Chi (天濟)	3	70
Jui Lung (瑞龍)	4	——
Chu Pao Chi (朱寶記)	3	100
Hua Hsing (華興)	9	270

Kuang Mei (廣美)	8	200
Sun Fu Tai (孫福泰)	3	60
Chin Mei (錦美)	8	360
Yun Hua (雲華)	6	160
Chang Ming (昌明)	6	80
I Cheng (義成)	3	90
Sun Chia Chi (孫嘉記)	7	360
Kuang Hsing (廣興)	4	160
Chiu Cheng (久成)	9	400
Ching Cheng (經成)	15	400
Yao Hua (耀華)	10	500
Wei Hsin (緯新)	12	300
Tien Lun (天綸)	6	240
Yu Hsing (裕興)	7	450
Yun Tan (雲旦)	8	240
Chih Cheng (志成)	10	500
Mei Hua (美華)	8	——
Yuan A Mao (袁阿毛)	3	90
Hua Feng (華豐)	3	90
Yu Li (有利)	4'	120
Chi Hsin (綺新)	18	800
Tung Ya (東亞)	6	220
Tien Feng (天豐)	10	500
Chi Lin (麒麟)	5	400
Chien Ya (建亞)	10	600
Kuang Ya (光亞)	14	380
Hsieh Chang (協昌)	4	120
Hsin Hua (新華)	6	180
I Hsin (一新)	6	200
Ho Sheng (和生)	16	500
Lung Hsing (隆興)	2	60
Chin Chang (勤昌)	4	120
Hua Hsin (華新)	7	240
Tien Feng (天豐)	3	100
Kai Tai (開泰)	12	300
Yu Hua (裕華)	12	360
Yung Yu (永裕)	2	60
Yung Feng (永豐)	4	130
Teh Hua (德華)	10	500
Yun Hsing (雲星)	4	120
Ta Hua (大華)	8	400
Tung Mei (東美)	8	400
Hsin Ya (新亞)	9	300
Heng Teh (恒德)	12	250
Teh Chang (德昌)	18	500
Ni Shang (霓裳)	6	180
I Hua (義華)	4	100

Yu Mao (裕茂)	4	180
Tung Sheng (同生)	4	60
Ta Chung Hua (大中華)	18	——
Mai Fa (美發)	4	90
Fu Cheng (復成)	2	60
Yu Sheng (友聲)	4	150
Hung Yuan (洪源)	3	100
Hsin Yuan (信遠)	8	400
Kuang Hua (光華)	6	200
Ta Chung (大中)	8	400
Wei Hsin (維新)	3	100
Chin Feng (晉豐)	3	90
Sun Yu (孫友)	4	120
Yen Tung (剡東)	2	——
Yen Tung (剡東)	3	100
Li Ta (利達)	15	——
Ta Chang (大昌)	4	120
Tung Cheng (東成)	8	400
Ta Chin (大錦)	12	300
Ming Sheng (民生)	8	200
Tai Chiu (泰久)	4	120
Ming Cheng (明成)	10	300
Mei I (美益)	4	120
Tien Hsiang (天祥)	7	210
Chin Ming (錦明)	4	120
Li Ya (麗亞)	4	120
Chiu Hsing (久興)	2	60
Kuo Ho Lin (郭和林)	2	70
Tai Feng (泰豐)	4	120
Nan Hua (南華)	8	360
Yu Cheng (友成)	14	——
Lu Tai (路泰)	8	——
Yu I (友誼)	10	500
Yung Feng (永豐)	6	150
Chen Hua (振華)	5	150
Yung Chang (永興)	4	200
Chin I (勤益)	12	600
San I (三益)	6	180
Hui Hua (惠華)	5	150
Shun Hsing Tai (順興泰)	17	700
Ya Chou (亞洲)	4	130
Wei Hsin (維新)	15	500
Heng Hsin (衡新)	6	150
Ho Hsing (合興)	3	60
Jung Fa (鎔發)	12	500
Kuang Hua (廣華)	14	400
Mei Hua (美華)	16	——

Chen Yeh (振業)	18	——
Lieh Chi (烈記)	11	500
Keng Chang (賡昌)	7	150
Hsing Hua (鑫華)	3	100
Hsieh Cheng (協成)	8	450
Tung Chang (同昌)	8	300
Lien Hua (聯華)	6	200
Ya Chou (亞洲)	13	400
Ta Wei (大緯)	23	600
Hsieh Hua (協華)	12	300
Shun Li (順利)	4	150
Mei Jen (美仁)	11	400
Tein Hua (天華)	18	——
Chin Yuan (晉源)	20	——
Hua Chiang (華強)	12	600
Ming Hsing (明星)	6	180
Tien Shun (天順)	6	200
Tung Teh (同德)	7	200
Yao Hua (耀華)	23	——
Hsien Ming (先明)	12	500
Tung Chang (同昌)	6	300
Ya Hsi Ya (亞細亞)	8	230
Mei Mei (美美)	5	150
Chin Feng (錦豐)	2	60
Ching Feng (錦豐)	3	90
Jung Chang (榮昌)	2	60
Hsu Chung Hsiang (許仲祥)	3	150
Ming Hua (明華)	12	——
Li Hua (麗華)	—	——
Hsin Hua (欣華)	2	60
Chuan Cheng (勤成)	3	90
Hsing Hua (興華)	6	300

NANKING

Nanking has enjoyed the distinction of manufacturing fine silk, fabrics, of which there are five classes most popular, the plain satin, *chin tuan* (錦緞), velvet, *chang tuan* (漳緞) and *chou* (綢).

Plain Satin—Plain satin industry of Nanking dates back to Ming Dynasty, when the manufactures were woven only for the wear of the Emperor and other uses in the court. During the years of Chien Lun (乾隆) and Hsien Feng (咸豐) of the Tsing Dynasty, the industry attained to the peak of its prosperity, and large variety was manufactured, such as *kung tuan* (貢緞, as a tribute to the

Emperor), *mupen tuan* (摹本緞), velvet satin, *kung chou* (貢綢), etc. Although the Taiping Rebellion brought an unprecedented disaster to this industry, it regained its former prosperity in the days of the Emperor Tung Chih (同治). In 1918 the looms in operation numbered over 10,000 with about 50,000 operatives, and the annual output amounted to more than 200,000 bolts, valued at $12,000,000. Besides a portion consumed in the country, considerable quantities were exported to Korea and French Indo-China.

Until 1918 this satin industry remained prosperous. Largely on account of the increasing preference among the Chinese for imported woolen fabrics, coupled with the increased duty of Japan and France at Korea and French Indo-China, demand for Nanking plain satin showed a sharp decline, and in 1929 the number of looms was decreased to a little more than 1,000.

At present only about 50 families are engaged in this domestic industry, with the total capital of $64,500, and 924 looms. Among the 50 families four have a capital of $5,000 each, six $3,000, two $2,000, and seven $1,000, the remaining having $500 each. The yearly production is 22,895 pieces, valued at $915,800 in.

Raw materials used in weaving plain satin consist of two kinds, the raw silk and the dyeing stuffs. The raw silk is of two classes, the silk warp and silk woof, the former being a fine silk used in weaving the surface of the satin, while the latter being a coarse silk used in weaving the field. The silk warp generally comes from Haining (海寧), Shiashih (硤石), Tsatlee (輯里), Tunghsiang (桐鄉), Wongtien (王店) Hsinshih (新市) and Tangsi (塘栖) in Chekiang Province. The annual consumption is about 1,000 bales weighing 1,500,000 *liang*. Silk woof is obtained from Kiangning, Chuyung, Lishui, Hengchi (橫溪) and Hsiehtsun (謝村), amount of consumption being about the same as the former. In dyeing the gallnut of Szechuen, corn of Shantung and Honan, tea and oil of Hunan, oak-bark of Hupeh, alum of Shantung and indigo of Kiangsi are generally used.

Plain satin of Nanking is of several grades, that about 140 *liang* in weight being the highest grade and that 40 or 50 *liang* in weight the lowest grade. The price varies

with the width and length of the satin: that 2-2/3 ft. to 3 ft. wide and 400 ft. long costs $50 for the first grade and $35 for the second grade; that 2 ft. and 5 in. by 50 ft. long sells at $55 for the first grade and $45 for the second grade; and that 3 ft. and 8 in. to 4 ft. in width and 50 ft. in length is sold at $100 and $70 for the two grades.

The market for this satin is very extended. The Three Eastern Provinces and North China used to consume an enormous quantity, but the Japanese invasion of Manchuria has considerably curtailed this market. Hankow, Canton and Szechuen were good markets for the satin during Tsing period, but little is shipped to these places new. The only places where it meets the growing demand are Yunnan and Kuichow, the annual consumption reaching the neighborhood of $160,000.

Chin tuan (錦緞) is a kind of satin with fancy designs. During the Sung Dynasty the variety by the name of Sung *chin* (宋錦) was specially made for Emperor's wear. During the Ming and Tsing periods this industry was most prosperous, it was widely used by Imperial families. The industry remained prosperous until 1911, when the great revolution broke out. Since then there has been little demand for this article and the industry has been declining. This article was introduced to foreign countries by foreigners touring in China and brought home with them this stuff. The makers, instead of weaving the old-fashioned *chin tuan*, began to manufacture cushions, table cloths, handbags, etc. with various patterns to meet the demand of the tourists. At present although a large number of families are still engaged in this handicraft industry only one has a capital of $3,000, two, $1,000, while the rest have each a capital of a few hundred dollars. In average each weaving worker receives a pay of 50 cents daily, each designer draws a monthly wage of from $24 to $30.

The raw materials used in the manufacture of *chin tuan* are of four kinds, silk, golden and silver thread, velvet, and rayon. The silk warp is collected from Haining, Chekiang, at $40-$50 per hundred *liang*, and silk woof is bought locally at $30-$40 per hundred *liang*. The golden and silver thread are supplied by the local manufacturers

and sells at $3 per *liang* for golden and at 30 or 40 cents per *liang* for silver. The velvet is furnished locally at the price of $60 per hundred *liang*, while rayon comes from Shanghai.

As a result of the curtailed market the annual production of *chin tuan* is considerably decreased nowadays. According to the manufacturer's report, the output in 1926 and 1927 was valued respectively at the neighborhood of $190,000, and that in 1928 and 1929 decreased to $150,000. Judging from the point that the manufacturers in Nanking carry on work only for four months from September to December and suspend operation for the rest of the year, it is clear that the output is still on the dcrease.

At present the market for *chin tuan* is limited. Mongolia and Tibet consume about $50,000 annually, North China takes not more than $10,000, and the export to Europe and America dose not exceed $40,000.

Velvet.—Nanking velvet is of two kinds, the *chien-jung* (建絨) and *chang-jung* (漳絨), both introduced from Fukien Province over sixty-years ago. This industry was at its height of prosperity thirty years ago, for the Nanking velvet was very popular among people in South China. But during the last quarter century the industry gradually declined. In 1928 there were 92 *chang-jung* weaving families with 159 looms, and 167 *chien-jung* weaving families with 329 looms. According to 1932 invesitgation, however, only 80 *chien-jung* and 5 *chang-jung* manufacturers are still working, the former decreasing over 50 per cent and the latter about 95 per cent.

Velvet is made of pure silk, but cotton yarn is also used to reduce cost. Silk is generally of local and Hangchow production, and about 30,000 *liang* is consumed annually.

Chang Tuan.—The manufacture of *chang tuan* (漳緞, satin with raised figures) was introduced into Nanking from Changchow (漳州), Fukien, in the early years of Tsing Dynasty. Prosperity was attained during the reign of Kwangsu (光緒) and Hsuantung (宣統), but thenceforth the industry declined gradually. In 1928 four families were still operating, but at present only one of them is at work, the other three having all closed down.

The manufacture turned out by Wei Chen Feng (魏正豐), the only weaver operating now, consists of two classes, the *chang tuan* and coloured velvet. The former is used for making clothes and the latter, being very beautiful, is used for decoratives purposes, as table-cloth, window-curtain, carpet, etc.

Chang tuan is consumed in small quantities in North China while colored velvet is much preferred in Tibet and abroad. The raw materials used are silk warp and silk woof, the former being suplied by the local filatures and the latter by the nearby villages.

Chou.—In Nanking there is only one factory, Li Chen (立成), engaged in manufacturing *chou* (綢) or silk pongee. This factory was reorganized from the original concern Yuan Cheng (元成) in 1929 and has a capital of $16,000, with 43 wooden looms and over 150 workers of both sexes. The male workers receive from $12 to $23 per month, while the females get from $3 to $9.

At present two kinds of *chou* are manufactured by Li Chien, one is called *chuan chou* (絹綢) and the other *cha chou* (柞綢), both used for making shirts. During the prosperous days the annual output amounted to 8,000 pieces, but at present only to 1,500, valued at about $50,000. Both of these two kinds of *chou* are mostly exported to India and Straits Settlements, besides a small portion consumed at home.

Regarding raw materials, the silk warp is obtained locally and the silk woof comes chiefly from Shantung and Shanghai. The annual consumption is 30,000 *liang* of warp and 60,000 *liang* of woof.

SHENTSEH

Shentseh (盛澤), a rich and populous town in the district of Wukiang, is an important silk-weaving center of Kiangsu Province. The frabrics produced are chiefly of two kinds—*fang chou* (紡綢), a light reeled silk pongee, and *ti* (緞) a heavy artificial silk pongee. The former has been a staple product of this town for hundreds of years, while the manufacture of rayon began only a few years ago.

Fang Chou.—Shentseh has been noted for its light reeled pongee since the 17th century, and in its most prosperous period the silks of this town were not only popular in China, but went abroad to the Straits Settlements and even to Europe. Only quite recently, owing to the competition of rayon fabrics and the high tariff walls set up by various countries, did Shentseh begin to lose most of its foreign markets. In 1930 Lang Mei-chun (郎梅春) established a small factory there and introduced a few power-driven looms, but his example has not been followed by many other manufacturers.

The manufacture of reeled silk pongee in Shentseh is a home handicraft practised among the farmers. It is even more important to them than their regular crops, as the proceeds from selling pongee constitute the principal income of over 20,000 families. The only machinery needed consists of a wooden or iron loom and a simple wooden reeling machine, and the cost of the two does not exceed $200, consequently reeled silk pongee is produced in almost every household in the district.

The material needed for making this fabric consists of raw silk and cotton yarn of 42-count or more. The silk comes mainly from Chekiang and is obtainable at many silk *hongs* (絲行) in the town at about 35 cents per *liang*. Japanese cotton yarn was largely used in former times, but now only the products of Shun Hsin (申新) and Wing On (永安) mills are used, though they are somewhat inferior in quality.

The first step in manufacturing is to reel raw silk on bobbins, and the reeled silk is then made into warp and woof threads by another reeling process whereby two threads are joined in one. About 50 or 60 warp silk bobbins are then arranged on a horizontal wooden bar, with a smooth brass ring before every bobbin through which the threads are drawn and fixed on the loom. Weaving is done by a shuttle to which the woof thread is attached.

Two kinds of looms are used in making reeled silk pongee, the wooden and iron variety, the former being the more popular owing to its smaller cost. Wooden looms are also of two kinds—the long loom is used in producing

fabrics about 60 feet in length, and the short loom for making fabrics about 12 feet long. The width varies from 1' 3" to 2' 2".

In addition to reeling the raw silk and preparing the warp and woof threads, it takes a weaver from two to five days to produce one *pi* (匹) or bolt of reeled silk pongee, while the figured variety naturally takes more time. Patterns for weaving figured fabrics are furnished by pattern plate makers in the town.

Many varieties of silk fabrics are included under the general name of *fang chou*, as shown by the following list, which gives the trade names of various kinds of reeled silk pongee produced in Shentseh:—

1. *Wen chuan* (紋綢).
2. *Pi hao tien po* (匹號店卜).
3. 72 ft. *kin chuan* (七二京綢).
4. *Shuan yung po* (雙湧卜).
5. 48 ft. *Chuen chuan* (四八川綢).
6. *Shen fang* (盛紡).
7. *Pan lin* (板綾).
8. 7 ft. broad *shen fang* (七尺加闊盛紡).
9. *Shih lin* (市綾).
10. *Ssu chin* (絲巾).
11. 1 ft. *chung su lin* (一尺中素綾).
12. 22" "Indian" *fang* (二二印度紡).
13. *Shuan po* (雙卜).
14. 20.5" x 20 yds. *yang chwang fang* (二〇五廿碼洋莊紡).
15. *Kwang kou fang* (光扣紡).
16. *Yang fang* (洋紡).
17. 23" x 10 ft. *yang chwang fang* (二三一丈洋莊紡).
18. 5 ft. *hwa ssu fang* (五尺華絲紡).
19. 1.6 ft. *yih tiao fang* (尺六金條紡).
20. 2 ft. *yih tiao fang* (二尺金條紡).
21. 2 ft. *hwa ssu fang* (二尺華絲紡).
22. 1.9 ft. x 55 ft. *hwa yang fang* (尺九五五花洋紡).
23. 1.9 ft. x 45 ft. *hwa yang fang* (尺九四五花洋紡).
24. 20 yds. rayon *fang* (廿碼花人造絲紡).
25. 2.3 ft. x 50 ft. *Chih lo* (二三五丈直羅).
26. 22" rayon *tsou* (二二人造絲縐).
27. 22" *si ssu sa* (二二西施紗).
28. *Chen hao chung shan ti* (正號中山綈).
29. No. 2 *chung shan ti* (二號中山綈).
30. *Chung shan ko* (中山葛).

The annual output of each of these fabrics varies with the demand, but according to an investigation conducted last year, it is approximately as follows:

	Output (pcs.)	Value
Fang Chou (紡綢)	30,000	$450,000
Pu Chou (卜綢)	10,000	25,000
Chung Shan Ke (中山葛)	60,000	600,000
Ling Chou (綾綢)	1,500	4,500
Rayon Tsou (人造絲縐)	6,000	60,000
Kuang Kou Fang (光扣紡)	20,000	300,000
Yang Fang (洋紡)	20,000	240,000
Hua Fang (花紡)	10,000	80,000
Chiao Shih Sha (交梭紗)	6,000	48,000
Ssu Chin (絲巾)	5,000	25,000
Chiu Lo Sha (秋羅紗)	1,000	3,500
Sheng Lo (生羅)	500	2,500
Chih Lo (直羅)	2,000	——

In addition to the quantity consumed in China, Shentseh reeled silk pongee is exported to Hongkong, Siam, and Straits Settlements. The total saie usually amounts to about $5.000.000 in value annually, but in recent years, owing to the depressed silk market, the production of reeled silk has likewise decreased.

The following table shows recent current prices of various kinds of Shentseh reeled silk pongee and their principal markets.

	Price per pi)	Principal Market
Wen Chuan	$2.00	Hankow, Fukien
72 ft. Kin Chuan	5.00	" "
48 ft. Chuen Chuan	2.50	" "
Pan Lin	2.00	" "
Shih Lin	6.00	Yangtse Provinces
1 ft. Chung Su Lin	4.00	" "
Shuan Po	3.50	" " and Tientisn
Chen Hao Tien Po	4.00	" " " "
Shuan Lien Po	8.00	" " " "
Shen Fang	6.00–15.00	Kwantung. T'tsin, and Hankow
Broad Sheng Fang	12.00	Peiping Tientsin, and Hankow
Ssu Chin	4.00– 9.00	Peiping, T'tsin, and Fukien
22" "Indian" Fang 20.5" x 20 yds.	23.00	Yangtse Provinces
Yangchwangfang	20.00	Yangtse Provinces

23" x 10 ft. Yang Chwangfang ...	28.00	Kwangtung, H'kong Singapore
1.6 ft. Yih Tiao Fang	11.00	" " "
2 ft. Yih Tiao Fang	20.00	" " "
1.5 ft. Hwa Ssu Fang	10.00	" " "
2 ft. Hwa Ssu Fang	19.00	Siam, Singapore
1.9 ft. x 55 ft. Hwa Yang Fang	20.00	" "
1.9 ft. x 45 ft. Hua Yang Fang	12.00	Fukien
20 yds. Rayon Fang	12.00	Siam, Singapore
22" x 50 ft. Chih Lo	19.00	" "
23" × 50 ft. Chih Lo	19.00	Yangtse Provinces
22" Rayon Tsou ..	11.00	" "
22" Si Ssu Sa	9.00	" "
Chen Hao Chung-shan Ti	12.00	" "
No. 3 Chungshan Ti	10.00	Szechuen, Fukien
Chungshai Ko	10.00	" "

The farmers sell their fabrics to the silk firms (絲行) in town through agents known as *ling tou* (領頭), who act as middlemen. As the weaving families are widely scattered in many rural districts, it is no easy task for the purchaser to collect a considerable quantity of the variety he wants, hence the services of these agents, who are natives of the town and familiar with every phase of the business, are necessary to bring buyer and seller together. Formerly they charged only a few cents commission on every *pi* of reeled silk pongee sold through them, as the business required no capital. In recent years, however, the silk firms have established branch stores in Shanghai and Wuhsien, where large stocks are kept for the conveniences of purchasers, and began to buy on account from the middlemen. On the other hand, it is a common practice among farmers to ask for part payment on account, so under these changed conditions it requires a considerable amount of capital to operate as an agent. There are about 150 of these middlemen in business, their capital ranging from several hundred dollars to over ten thousand, and commission of from $0.20 to $1.20, according to the size

The annual output of each of these fabrics varies with the demand, but according to an investigation conducted last year, it is approximately as follows:

	Output (pcs.)	Value
Fang Chou (紡綢)	30,000	$450,000
Pu Chou (卜綢)	10,000	25,000
Chung Shan Ke (中山葛)	60,000	600,000
Ling Chou (綾綢)	1,500	4,500
Rayon Tsou (人造絲縐)	6,000	60,000
Kuang Kou Fang (光扣紡)	20,000	300,000
Yang Fang (洋紡)	20,000	240,000
Hua Fang (花紡)	10,000	80,000
Chiao Shih Sha (交梯紗)	6,000	48,000
Ssu Chin (絲巾)	5,000	25,000
Chiu Lo Sha (秋羅紗)	1,000	3,500
Sheng Lo (生羅)	500	2,500
Chih Lo (直羅)	2,000	——

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and value of the fabric, is charged on every *pi* of reeled silk pongee disposed of through them.

When a weaver sends a parcel of silk fabric to an agent, he usually expects to receive in advance 70 or 80 per cent of the value, the balance to be paid when the goods are actually sold. An agent, once he accepts a consignment from a weaver, is under an obligation to sell for him, though there is no time-limit imposed. The agent is an important factor in the production of Shentseh reeled silk pongee, for without his advance payments to the weaver, the latter would be often unable to produce any fabric owing to lack of capital.

The Shentseh silk firms are the principal media for distributing reeled silk pongee to various parts of China and to other countries. There are about 60 such firms in the town, their capital ranging from several thousand to over 100,000 dollars. The larger ones usually have branch stores in Shanghai and Wuhsien.

Ti.—The manufacture of ti on power-looms is of very recent origin in Shentseh, there being only seven factories in the town. With the exception of two, the Min Sen and Ta Chun Hua factories, which have their own sales department and are in operation throughout the year, the Shentseh *ti* factories are entirely dependent upon Shanghai silk firms, and are in operation only when orders and raw material (rayon) are sent to them. The following table gives some details of these factories:—

	Established	Organization	Capital	No. of Looms	No. of workers
Min Sheng (民生)	1931	Partnership	$15,000	48	60
Chin Yieh (勤業)	1932	,,	1,200	6	8
Ta Chung Hua (大中華)	1932	,,	5,000	18	48
Yung Hsiang (永祥)	1932	,,	3,000	10	15
Mei Li (美麗)	1931	,,	2,000	8	11
San Min (三民)	1931	Corporation	6,000	8	20
Jen Chi (仁記) (in organization)		Partnership	3,400	13	17
Lang Chin Chi (郎琴記)	1930	Individual ownership	2,000	6	9

Both male and female workers are employed in these factories, the former in weaving, and the latter in rayon

reeling. Wages are paid on piece-rates, a female worker receiving 20 cents for reeling a package of rayon, while a male worker gets $1.20 per *pi* or 4-5 cents per yard for weaving.

Rayon is the principal raw material for manufacturing *ti*. Formerly supplies came mainly from Japan, but since the beginning of the boycott, Italian yarn has been used. The quantity consumed by the Shentseh factories is not definitely known, as most of the factories do not buy rayon direct, but lease their looms to Shanghai silk firms, who provides all the necessary raw material. According to an investigation made last year, the annual consumption of rayon yarn was found to be approximately 10,300 packages (515 boxes).

The products of the Shentseh *ti* factories are the same as those of the Shanghai mills, and the process of manufacture are also similar. The following table shows the annual output of each factory; together with approximate values:—

	Annual Output (pi)	Price (per pi)	Market
Ming Sheng	4,000	Tls. 14	Yangtse provinces
Chin Yeh	——	——	——
Ta Chung Hua	——	Tls. 14	Yangtse provinces
Yung Hsiang	1,000	$27 per pi of 80 ft.	Shanghai
Mei Li	1,400	14 per pi of 80 ft.	Yangtse provinces
San Min	2,000	Tls. 15	——
Lang Chin Chi	1,000	——	——

TANYANG

Silk fabrics manufactured in Tanyang is commonly known as *yang chou* (陽綢), or as *hu chou*, of which the art of making is introduced from Huchow (湖州), hence the name. The workmen of Tanyang returned from Huchow to set up business for themselves about 50 years ago. In a few years the number of looms was over 500 and the product gradually became popular. After the establishment of the Republic wooden looms were displaced by iron looms of which the number were increased to over 4,000 in 1924, with an annual production of 300,000 pieces, worth

about $6,500,000. Since the introduction of rayon fabrics, however, its market has been greatly displaced, and the Japanese invasion of Manchuria in 1931, and the sharp fall in the price of silk combined to affect the industry more seriously, when the looms remaining in operation numbered 300 only.

Now there are five factories still engaged in this industry, details of which are as follows:

Name	Established	Capital	Iron Looms	Workers
Chung Hsin Hsin Chi (中新新記)	1919	$10,000	62	300
Chung Hsin Jen Chi (中新仁記)	1930	8,000	20	85
Chiu Lun (九綸)	1930	1,000	—	46
Wei Cheng (蔚成)	1927	——	—	52
Mei Feng (美豐)	1931	——	—	33

In addition to the five factories, there are nine families engaged in this manufacture with a total capital of $13,500 and an annual production of nearly 2,000 pieces worth about $20,000.

The raw silk used in weaving these silk fabrics is obtained from Chintan, a neighboring city of Wuhsien and Nanking, at the price of $30 per hundred *liang*. The annual consumption in the five factories is 200,000 *liang* for Chung Hsin Hsin Chi; 80,000 *liang* for Chung Hsin Jen Chi; 92,000 for Chiu Lun; 36,000 for Wei Cheng and 21,000 for Mei Feng.

Among the varieties turned out by the factories and the families *yang chou* takes the leading place, amounting to over 100,000 pieces annually. The largest market is Shanghai, with Nanking second. Sales are done through an agency of *chou chuang* (綢莊), which collects the fabrics and then sells them to the merchants of various localities.

CHINKIANG

Silk-weaving in Chinkiang is a domestic industry followed by the farmers as a side line occupation. Of the varieties manufactured four kinds are famous, the *hsien chou* (線綢), *ling chou* (綾綢), *tafu chou* (塔府綢) and *chienssu* (線絲). During the prosperous days there were more than 3,000 looms more than 3,000 looms operating, with the annual output valued at Tls. 3,000,000. But at present only 1,000 looms are in operation, and the yearly production approximates 80,000 pieces, of which *tafuchou* occupies 60 per cent, *hsien chou*, 30 per cent, and *ling chou* and *chienssu*, 10 per cent. The total value covers not more than $1,000,000, distributed as follows:—

	Production (pi)	Price
Hsien chou	15,000	$20
Ling chou	4,000	20
Chien ssu	5,000	15–20
Ta fu chou	50,000	12

Market for Chinkiang silk was very wide about forty years ago, but has been considerably curtailed now. *Hsien chou* and *ling chou* are largely sold in Hunan, Hupeh, Manchuria and North China, *chienssu* is only consumed in the northern districts of Kiangsu, while *ta fu chou* is sold both at home and abroad.

In weaving these silks, both warp and woof are of real silk, the former being obtained locally, and the latter supplied by the filatures of Haining and Shiashih in Chekiang Province.

WUHSIEN

There are three kinds of silk fabrics manufactured in Wuhsien, the *sha tuan* (紗緞), *chang tuan* (漳緞), and *tieh chi tuan* (鉄機緞). The two first named have several hundred years of history, while the last was introduced only a few decades ago.

Sha tuan is a fabric with fancy designs and was very extensively used in the Imperial Court of the Manchou government. Its height of prosperity was reached during the reigns of Tungchih and Kuangsu. Many million taels worth of this article was consumed every year, not only at home, but also in Russia, Korea, Burma, India, etc. In Wuhsien a government agent was established in the Ching Dynasty for the purchase of the *sha tuan* for the use in the Imperial Court.

With the establishment of the Republic, the demand from the Imperial Court for this product completely disappeared, and the market abroad was likewise curtailed by the high tariff on this article. The import duty on *sha tuan* is said to be as high as 100 per cent imposed in Korea. The industry has since gone down to a deplorable state.

During the most prosperous period of the industry, the number of looms, which were made of wood, was almost 1,000, and the number of people engaged in the trade was over 30,000. In addition, there were many thousand indirectly connected with the trade, making a total of over 100,000 to one-third the population of Wuhsien. At present there are left only about 200 families still keeping up operation, and most of them are found in Chiang Lou (江婁) and Chi Men (齊門). The annual output has decreased to about 60,000 pieces a year, consumed most at home ports.

Chang tuan.—Although *chang tuan* is a famous silk fabric of Wuhsien, it is nevertheless in a most depressed state today. In 1904 this industry was in its best time, with 700 looms in operation and the yearly production was valued at several hundred thousand dollars. Since 1912, however, it has lost its importance as a fine material for clothing purposes. Our investigation revealed that this industry has almost entirely vanished. Only six or seven looms are being operated at present, and the total value of a year's output is estimated to be about $3,000. The material is now used in making cushion tops and for other decorative purposes. The chief market is Peiping and the northern cities of the Province.

Tieh chi silk fabrics.—*Tieh chi* (iron loom) satin weaving industry in Wuhsien is of recent origin. During the period between 1918 and 1926, this industry was very thriving. The number of factories estimated during these years was over a hundred. But shortly after this, a sharp decline was seen, due largely to the inability to compete with imported fabrics, and today only twenty larger and fifty small factories are still operating. The largest of these factories is the Chen Ya (正亞), with a capital of $40,000.

In most of these factories the iron looms are operated by electricity, while hand driven machines are still found in smaller concerns. There are at present about 250 electricity-driven machines and about 500 hand-machines operating. Both male and female workers are employed, at wage of from $15 to $37 a month, or by piece at 15 cents per foot.

Raw materials used in weaving *tieh chi* fabrics are filatured silk and rayon. The silk is supplied by the silk filatures in Shanghai and Wusih, at the prices from Tls. 500 to Tls. 600 per picul. Rayon is mostly imported from Germany and Italy, at about Tls. 300 per case.

A large variety of fabrics are turned out by these concerns, the more popular being the *ch'ou* (綢), chou (縐) *ke* (葛), *sha* (紗), *tuan* (緞), *lo* (羅), *chuan* (絹) *ti* (綿), *fang* (紡), etc. These fabrics are either woven with pure silk or rayon, and with mixture of real silk and rayon or wool. The prices of these fabrics produced by the Chen Ya mill are as follows:

	Price per foot		
Pure silk fabrics	$0.50	—	$1.50
Mixture of rayon and wool	1.20	—	1.30
Mixture of real silk and rayon ..	0.80	—	1.50
Mixture of real silk and wool ...	1.50	—	1.65

According to the estimate of the *tieh chi* weaving industry, these factories turn out about 2,000 piculs of fabrics a year, worth over $1,000,000. The following table shows the output of the four large mills in Wuhsien:

	Output (Pieces)	Brands
Chen Ya (振亞)	8,400	Chen Ya
Kai Yuan (開源) ..	4,000	Yen Ling (延陵), Sung Ho (松鶴)
Chung Ho (中和) ..	3,000	Kai Yuan
Tung Wu (東吳) ..	1,200	Chih Nu (織女)

The principal market for these products is Shanghai, while Kuangtung and Fukien provinces also absorb a considerable quantity. They are exported to Hongkong and Straits Settlements, and sometimes to New York, San Francisco, and London.

CHAPTER III

BLEACHING, DYEING AND PRINTING

ALTHOUGH the art of bleaching and dyeing of piece goods was known in China hundreds of years ago, very little progress has been made owing to the lack of scientific knowledge of the industry. The old methods are employed even today by many Chinese dyeing works or *jan fang* (染 坊) which dyes only blue and green colours by the fermentation of indigo, while in the bleaching industry the bleaching of cotton piece-goods is by boiling the fabrics with soda and drying by sun heat. The works engaged in dyeing cloth into gray and black are known as *hui fang* (灰 坊) and employ alum, and birch bark.

Since the import of artificial indigo into China in 1902 *hung fang* (紅坊) or red dyeing works, *ssu ching fang* (絲 經 坊) or silk goods dyeing works, *hsien fang* (線坊) or thread dyeing works and *chou pu jan fang* (綢布染坊) or silk and cotton piece-goods dyeing works have been established.

Lime and bean paste were used in printing cotton goods. But since the Republic bleaching and printing have been done with machines and the old style works closed down down one after another.

The pioneer dyeing plant, the Chi Ming Dyeing and Weaving Facotry (啓明染織廠), was established by Chu Wen Ch'i (諸 文 綺) in 1912, which was engaged in dyeing mercerized cotton yarns. The next year observed the opening of the China Dyeing Works Ltd. (達 豐 染 織 廠) by Wong Chi Yu (王 啓 宇) on a much larger scale than the first one. In 1919 a new building was put up for the dyeing works and the Chen Tai Cotton Mill (振 泰 紗 廠) was founded by the last named company. Cotton yarns produced by this mill are woven into cloths and dyed, mercerized and finished by the China Dyeing Works.

Following their wake closely are the Hung Chang (鴻章), Kuang Hua (光華), Hsieh Feng (協豐), Tseng Yu (增裕), latter known as Chin Feng (勤豐), Kuang Chung (光中), Jen Feng (仁豐), Ta Tung (大同), etc. The daily output of each factory was at first only a few bales, but now owing to the rapid increase in the number of factories it is estimated that the total output in Shanghai is over 7,000 pieces of cloth and 200 bales of yarn per day, Japanese cloth being now supplanted by domestic products exclusively.

Before dyeing, cloth of fine quality has to undergo refining process which was done with the ash of mulberry leaves in old times. In 1912 a Japanese concern known as the Chung Hua Dyeing and Refining Co. (中華精煉公司), made its appearance. Realizing the importance of having a similar Chinese enterprise, Chen Szu Lan (陳似蘭) in 1918 started the Shanghai Dyeing and Refining Co. (上海精煉公司) with a capital of $30,000. In 1915 Yun Chang Dyeing and Refining Co. (雲章染煉廠) was organized and in 1926 the Wei Cheng Silk Weaving Factory (緯成織綢廠) began to run the Ta Chang Dyeing and Refining Co. (大昌精煉染色公司) as its secondary business. The Mayar Silk Mills too, operates a dyeing works, called Mei I (美藝). Recently, Ta Chung Hua (大中華), Ching Yeh (精業), Ta Cheng (大成), Chung Ho No. 1 (中和第一廠) made their appearance one after another. Up to the present there are more than ten of these enterprises. It is reported that it is now under consideration that an association for this industry is to be formed. While business of Chinese concerns is growing in volume, the business handled by the Japanese factory known as Chun Hua has been dwindling since the Sino-Japanese "war" in Shanghai.

Printing with bean paste and lime was known to the Chinese more than a hundred years ago. Later, printing by steam or by glutinous rice paste was invented and adopted, but these methods again gave way to improved bean paste printing. Not until the first year of the Chinese Republic by the introduction of modern method of printing on satin and pongee into China by a Japanese concern, Matsuoka & Company (松岡洋行), that machine printing is known to the Chinese. Since then factories on

modern lines have been founded in rapid succession, the Chung Kuo (中國) in 1919 by Chin Yin Chia (欽英垚), Hsin Teh (信德) in 1921, and recently, Tien Sun (天孫), Kung Ta (公達), Yu Ta (裕大), Chung Hsing (中興), Tung Fang (東方), etc. In the Silk Fabric Printing Association lately are represented more than 20 different concerns, including those having suspended operations or closed down entirely after the Sino-Japanese hostilities in Shanghai in January, 1932.

The Shanghai Printing and Dyeing Company (上海印染公司) is the largest company of its kind in Shanghai, its annual output being valued at over Tls. 2,500,000. The Hsin Chung Hua Printing and Dyeing Co. (新中華印染公司) and the printing department of the Kuang Hua Dyeing and Weaving Factory also turn out large quantities of printed cotton piece goods.

PRESENT CONDITIONS

There are now about 200 factories engaged in bleaching, dyeing, and printing in Shanghai. The following table gives a general idea about bigger factories in Shanghai:—

BLEACHING AND DYEING WORKS IN SHANGHAI

	Capital	Operatives	Output
Chi Ming (啓明)	$100,000	215	$1,600,000
China Dyeing Works (達豐)	₹1,000,000	700	5,160,000
Hung Chang (鴻章)	1,500,000	2,500	9,360,000
Jen Feng (仁豐)	$150,000	282	2,800,000
Kuang Hua (光華)	₹150,000	800	5,800,000
Ying Chow (瀛洲)	20,000	168	340,000
Hung Hsin (鴻新)	$34,000	345	510,000
Chen Ho (振和)	₹20,000	120	210,000
Hung Yü (鴻餘)	$16,000	70	140,000
Ta Tung (大同)	20,000	60	120,000
Chün Chang (均昌)	10,000	120	260,000
Kuang Chung (光中)	60,000	170	1,300,000
Ta Hsing (達興)	8,000	29	50,000
Yuan Sheng Hsieh Chi (源盛協記)	15,000	56	80,000
Ho Feng (和豐)	15,000	66	50,000
Wan Sheng (萬生)	5,000	34	40,000
Feng Ho (豐和)	5,000	20	30,000

Ta Hua (大華)	30,000	60	300,000
San Lu (三六)	20,000	140	200,000
Mei Feng (美豐)	6,000	60	250,000
Ta Ho (大和)	5,000	50	200,000
Ta Yuan (達源)	5,000	40	150,000
Sen Tai (森泰)	6,000	60	300,000
Yu Chang (裕昌)	5,000	25	200,000
Yung Yuan (永源)	5,000	30	280,000
Tung Teh (同德)	₸5,000	50	230,000
Yung Yü (永裕)	$5,000	35	200,000
Hsieh Chi (協記)	10,000	50	160,000
Chin Hua (錦華)	10,000	100	270,000
Hsieh Hsin Hsin Chi (協興新記)	6,000	42	140,000
Hsing Mou (興茂)	10,000	31	130,000
Hsiang Yü (祥裕)	₸5,000	28	180,000
Hua Chang (華昌)	$5,000	26	150,000
Ta Lu (大陸)	10,000	30	180,000
Wu Ho (五和)	10,000	37	220,000
Tung I (統一)	10,000	33	200,000
Chung Hua (中華)	7,000	56	190,000
Yü Lun Ting Chi (裕綸鼎記)	5,000	63	150,000
Lao Cheng Ho (老正和)	10,000	160	350,000
Tai Ho (泰和)	5,000	26	120,000
Chein Ta (乾大)	6,000	27	140,000
Chin Feng (勤豐)	₸100,000	160	1,960,000
Chiu I (久益)	$ 5,000	25	160,000

DYEING WORKS IN CHINKIANG, WUSIH & SUNGKIANG

	Capital	Operatives	Output
Kwang Ming (光明)	$5,000	15	$30,000
P'an I Hsing (潘義興)	1,000	20	——
Chin Chang (錦記)	1,000	20	20,000
Sheng Kwang Mou Yung Chi (沈廣茂永記)	4,800	17	20,000
Chen Hua (振華)	2,800	13	10,000
Tien I (天一)	1,500	6	3,000

REFINING & BLEACHING WORKS IN SHANGHAI

	Capital	Operatives	Output
			pcs.
Shanghai (上海精煉公司)	$30,000	96	300,000
Yün Chang Ch'ing Chi (雲章慶記染煉廠)	₸20,000	38	200,000

Ta Chung Hua (大中華)	$30,000	64	250,000
Ta Chang (大昌)	100,000	80	600,000
Mei I (美藝)	100,000	90	600,000
Ching Yeh (精業)	20,000	50	200,000
Ta Hsing (大興)	10,000	20	150,000
Chung Ho (中和)	30,000	58	300,000
Ti I (第一)	20,000	52	300,000
Yun Sheng Hsiang (雲昇祥)	5,000	16	100,000
Chü Tai (聚泰)	5,000	18	100,000
Teh Tai (德泰)	7,000	20	100,000
Ta Mei (大美)	5,000	16	100,000
Chung Kuo (中國)	10,000	30	200,000
Hua Hsin (華新)	4,800	13	10,000

In the above tables factories with a capital less than $1,000 are not included. Prices for refining and finishing range from 40 cents to $1.60 per piece. Basing on the average of 80 cents per piece the total output from the above factories will be valued at over $2,800,000 a year.

For convenience sake we shall classify all the printing factories into two groups, one printing silk fabrics and the other cotton piece goods. In the first group the following enterprises are more famous:—

		Capital	Operatives	Output (Approximately)
Chung Kuo	(中國)	$20,000	123	$150,000
Hsin Teh	(信德)	25,000	146	100,000
Tien Sun	(天孫)	5,000	58	60,000
Hsin Kuo Min	(新國民)	8,000	36	40,000
Kung Ta	(公達)	2,000	35	30,000
Yü Ta	(裕大)	2,000	25	28,000
Chung Hsin	(中興)	1,500	15	20,000
Tung Fang	(東方)	3,000	16	21,000
Hua Tung	(華通)	5,000	21	25,000
Hung Hsiang	(宏祥)	3,000	40	28,000
Sen Lee	(森利)	2,000	20	30,000
Hui Tung	(匯通)	1,400	17	9,000
Tien Fu	(天福)	3,000	24	15,000
Lin Hsing	(霖興)	1,000	8	3,000
Kiu Fu	(九福)	1,600	12	8,000
Ta Hua	(大華)	5,000	30	17,000

Hsin San Yu	(新三友)	2,000	14	12,000
Ta Tung	(大　東)	1,000	10	7,000
Chi Hsin	(啓　新)	2,000	30	10,000
Yung Hsing	(永　興)	₸ 2,000	14	(*)
Chung Hua	(中　華)	$15,000	100	(*)
Ta Sheng	(大　生)	2,000	14	10,000

For factories printing cotton piece goods the four in the following will represent the industry:—

	Capital	Operatives	Annual Output
Shanghai (上海)	$ 600,000	270	$3,500,000
China (達豐)	1,000,000	440	5,160,000
Kwang Hua (光華) ..	₸ 110,000	426	1,150,000
Hsin Chung Hua (新中華)	$ 5,000	30	50,000

Bleaching, dyeing and printing factories which are members of the Fe Yang Printing and Dyeing Association (啡洋印燙染同業公會) and still employing native methods are capitalized from $700 to $3,000. The large factory employs over ten operatives, while the small one five or six only. They are to be classified to *ching lan fang* (青藍坊) or green and blue dyeing works; *yang se fang* (洋色坊) or "foreign dyeing works; *yin fang* (印坊) or printing factory; and *piao fang* (漂坊) or bleaching factory. The following concerns are some of the largest ones in respective districts:—

SHANGHAI.

Chin Lan Fang

1. Yuan Tai (元　泰).
2. Lao Wan Shun (老萬順).
3. Wan Mou (萬　茂).
4. Hsieh Ta (協　大).
5. Yü Hsiang (裕　祥).
6. Chêng Feng Hsin (誠豐新).
7. Ta Tung (大　同).
8. Wan Feng Tai (萬豐泰).
9. Yung Tai (永　泰).

(*) Newly established.

Yang Sé Fang

1. Jui Hsiang (瑞 祥).
2. Yuan Chang (元 昌).
3. Hua Lee (華 利).
4. Yung Teh (永 德).

Yin Fang

1. Lao Jen Ho (老 仁 和).
2. Shêng Ho (昇 和).
3. Yü Chang (裕 昌).
4. I Tai H'u (義 泰 和).
5. Cheng Hsin (成 興).

Piao Fang

1. Heng Chang (恆 昌).
2. Kwang Ta (廣 大).
3. Heng Tai (恆 泰).
4. Hêng Shêng (恆 升).
5. Hung Chang (洪 昌).
6. Shun Hsin (順 新).

WUSIH.

Chin Lan Fang

1. Yuan Feng Yü (源 豐 餘).
2. Yung Yuan (永 源).
3. Shen Tai (愼 泰).
4. Kung Yu (公 裕).
5. Li Hsing (立 興).

Yang Sé Fang

1. Ya Mei (亞 美).
2. Lao Hsing Tai (老 信 泰).
3. Ming Hsing (明 星).
4. Mei Tung (美 通).

TANYANG.

Chin Lan Fang

1. Tai Yuan (泰 源).
2. Ch'ing Yuan (慶 源).
3. Yung Yuan (永 源).
4. Sên K'ang (森 康).
5. Ch'un Yuan (椿 源).

TANGSHAN

Chin.Lan Fang

1. Kung I (公 易).
2. San Shêng Kung (三 盛 公).
3. Mou Shêng (茂 盛).
4. Tseng I Chuan (增 義 泉).

RAW MATERIALS

Bleaching powder, dyes, hydrochloric and sulphuric acids are the important raw materials for the bleaching and dyeing industries, the largest portion of which come from Germany and a small part from Great Britain, the United States, Japan, and Switzerland. Before the introduction of imported dyes into the industry domestic vegetable dyes were used, and about 70 per cent of Chinese vegetable indigo was used by dyeing works. Thirty years ago large quantities of Chinese indigo were exported, but since the invention of artificial indigo by the Germans the export of Chinese indigo had decreased and has almost entirely ceased. On the other hand the import of German artificial indigo has been on the upward tendency, quantity imported in 1902 being only 3,625 piculs valued at Hk. Tls. 131,224. Chinese-made, and even imported, cotton piece goods were dyed by Chinese works, while in 1913 the record was 314,268 piculs valued at Hk. Tls. 9,628,670, an increase of about tenfold within ten years. That the increase in the volume of the trade has not ceased can be shown by the value of the import last year, Tls. 17,424,568, excluding aniline dyes and sulphur black and others, which were valued at over Hk. Tls. 16,000,000.

Vegetable dyes are found in great abundance in Nan-siang (南翔), Hwangtu (黃渡), Kiangsu Province; Chinhua (金華), and Chuchow (處州), in Chekiang; Fatshan (佛山), in Kwangtung; Loping (樂平), in Kiangsi; Lishih (醴石) and Huohsien (霍縣), in Shansi; and provinces of Anhui, Hupeh, Szechuen, Yunnan, Kui-chow and the Three Eastern Provinces. Since the adoption of artificial indigo of various forms as dye stuffs, Chinese natural dyes are no longer used, except in the interior. As a result, the use of natural indigo, safflower (紅 花, *Carthamus tinctorius* L.); sapenwood (蘇 木,

Caesalpima Sappan L.); turmeric (薑黃, *Curcuma longa*); *yükin* (鬱金, *Curcuma longa* var. *macropyhll* Mrq); and nutgalls are decreased by 70 per cent. According to investigations made by an American, Chinese dyes are very endurable, but owing to the difficulties in application as well as comparatively high price, their position on the market has been gradually supplanted by imported stuff. A certain proportion of hydrochloric and sulphuric acids and bleaching powder used in dyeing and printing industries are supplied by the Tien Yuan Electric-Chemical Works (天原電化廠), Kai Chen Acid Manufacturing Co. (開成造酸公司) in Shanghai, and Teh Lee Three Acids Manufacturing Co. (得利三酸廠) and Po Hai Industrial Chemical Works (渤海化學工業社) in Tientsin, the output from the last two factories being very small.

PRODUCTION

In dyeing cotton yarn, they are first cleansed by boiling with alkalis before mercerized and put into acid solution to be neutralized. Then bleaching or dyeing is applied according to the colour desired.

In dyeing cotton piece-goods the fabrics are first rid off the naps by fire, then are dipped into water to remove dirts and paste and lastly dyed in the same way as yarn is dyed. Before being bleached the fabric is boiled in a caldron from two to four hours and rinsed twice. After being bleached it is neutralized by dipping in acid trough and then dried, extended, pressed and finally measured and packed.

Fabrics of fine quality must be cleaned and bleached before dyeing. By cleaning is meant to boil the fabrics with an alkaline solution in soft water with soap and then undergo various finishing machines.

Printing on silk fabrics is usually done by manual labour. The process is to put a stencil paper on the goods to be printed and then apply the mixture of dye with glutinous-rice paste. If different colours are wanted apply them at different times. The background colour is not applied until the printing is dried up. In order to keep

the colours from fading the fabric is to be steamed in a steam box and cleaned in running water, the time being fixed according to the quality of the fabrics. In machine printing before the fabrics is extended it is put to a cylindric printing machine, the design being engraved on the cylinder. The number of colours can be printed is usually two less than the number of cylinders the machine contains, for instance, the machine of the Shanghai Printing and Dyeing Works is of eight cylinders, but their products are usually of six colours.

As a great stride has been made in piece goods manufacturing by the Chinese, the imports of foreign cotton piece goods have been decreasing considerably. In 1922, 12,500,000 pieces were imported, while in 1931 only the quantity decreased to 3,450,000 pieces. Now, shirting, sheeting, T-cloth, oatmeal crapes, serges, alpacianos, striped poplins, imitation venetians, repps, drills, jeans, printed satin, khaki, cotton yarns, etc. form the largest proportion of products from cotton weaving factories in Shanghai. Although there is no accurate statistics showing the actual produce, but according to the estimate—which is made according to the following assumption—of an cotton piece-goods authority, the aggregate value of annual output is over $60,000,000:—

	Average Daily Output		Average Price per piece	Total Value	Annual Value (330 days)
Cotton Yarn (Mercerized & dyed	200	bales	$320	$64,000	$21,000,000
Cotton Piece Goods	7,000	pieces	14	98,000	32,000,000
Printed Goods	2,000	,,	10	20,000	6,600,000

In the above figures the amount of business done by silk piece goods printing and finishing factories is not included, the former amounting to $600,000 and the latter $2,880,000 annually.

MARKET

About four-fifths of cotton yarn from Shanghai mills and factories are sold in Shanghai with the remainder exported to other ports, while cotton piece goods sold in Shanghai is only one-fourth of Shanghai's total output.

This is because the aggregate output of cotton piece goods from Shanghai factories is so small that it is only sufficient to displace one-fourth of imported goods, despite the fact that the home-made serges, cotton flannelette, pongees, printed lawns, venetians, printed shirtings and sheetings. T-cloths, drills, jeans, stripe flannel, etc. surpass imported goods in quality. Among the goods imported Japanese article form the largest proportion. With the exception of gray and white shirtings which is represented only by 10 per cent, other kinds of cotton piece goods from Japan occupy 80 per cent or over of the total.

For computating the output of printing, refining, and finishing factories in Shanghai we can only count the amount of business done on printing, refining, and finishing, no value of the piece goods itself shall be included. According to one expert about 5,000,000 pieces of goods are handled by those factories annually. Piece goods measuring from 16 to 25 yards are charged from 40 cents to $1.60 per piece, while those measuring between 40 and 50 yards are counted as two pieces. With an average price of 80 cents per piece, the total business done is valued at $4,000,000 annually.

Great progress has been made in China's cotton piece goods industry lately, but owing to the limited output, and in order to meet domestic demands, large quantities of foreign goods have still to be imported. The most keen competitors are goods manufactured in China by foreign concerns, especially the Japanese. In Shanghai alone there are 27 Japanese factories engaged in the business. Besides those mentioned in foregoing paragraphs, fancy designs of printed cotton crapes, printed cambrics, lawns, leno, brocades, etc. from Japan appeared on Chinese markets before the European and American goods step in. It is not difficult for Chinese factories to turn out the same kinds of goods, but the limited demand does not warrant their manufacture.

Cotton yarn and threads are bought either direct from cotton mills or through *hongs* or firms. No deposit is generally necessary for spot goods if it is to be cleared within a week or two. Forward orders can be made in cotton exchange or foreign firms with a certain amount of deposit, this being not always required by foreign firms

from creditable buyers. Cotton piece goods to be printed or finished are either supplied by their own mills or bought from other mills or foreign firms. Cotton mills usually ask no deposit and sometimes allow the account to be settled at the end of the month, if they think the buyer has enough credit. While foreign firms demand a deposit of Tls. 10 on each box of goods, and the balance is to be paid within three days in order to clean the consignment. But reliable and old customers generally enjoy the privilege of not depositing any money on making the order and they are also allowed to clean their goods one month later, pigments, bleaching powder, sulphuric and hydrochloric acids are usually ordered from foreign firms, but sometimes a small portion is bought from pigments shops.

There are many middlemen between the cotton piece goods producers and consumers. Outputs from cotton mills, dyeing and printing works generally first go to wholesale dealers, who buy from the producers with cash or settle their accounts twice a month or three times a year according to their commercial connections. From wholesale dealers retail dealers buy mostly with five-day native orders. Again from retail dealers piece goods shops and cloth vendors in inland districts buy with ten-day native orders.

In printing and finishing industries the transaction of business between the consignor and consignee is not so complicated as the above. The delivery of goods and receipt of payment are all carried out with chit books. But printing factories with a very small capital are sometimes asked for guarantee for the goods they receive, while large factories print and dye their own goods from associated mills. It is quite common for a dyeing works to open a cotton yarn shop to sell their own products. This needs substantial financial aids, which usually come either from banks, native banks, or money deposited with the factory.

CHAPTER IV

WOOL INDUSTRY

THE FIRST wool factory in Kiangsu Province was the Jih Hui Woollen Cloth Weaving Mill (日暉織呢廠) founded in 1906. It was capitalized at Tls. 260,000, and equipped with 44 machines and 1,750 spindles. But owing to bad business, the plant was closed down in 1910 and was taken over by the Ministry of Finance. Later, the mill was rented out at a sum of Tls. 14,000 to a private corporation, and is now known as the China No. 1 Woollen Weaving Factory (中國第一毛織廠).

In 1919, the Wei I Woollen Weaving Company (唯一毛絨紡織公司) was organized in Shanghai by a group of Ningpo merchants, and it was followed by the Hsien Ta Wool Weaving Factory (先達呢絨紡織廠) in 1924. Three more factories were founded in the following years, namely, the Sheng Ta (勝達), Wei Lun (緯綸), and the Tien Hsiang (天翔). In order to avoid unnecessary competition, a joint sales office was established in 1929 by the five factories. But the product of all these factories was confined to a kind of fleece-lining known as *lo to jung* (駱駝絨). It was not until 1929, when the Ta Hua Factory (大華呢絨廠) was founded and turned out serge, khaki cloth, and other woollen textiles. In 1930, a mill of the similar nature known as the Chang Hua Woollen Cloth Weaving Company (章華毛絨紡織公司) was founded. Both Ta Hua and Chang Hua mills are running successfully, their products being capable of competing with imported woollen fabrics on the home market, as the high exchange has nearly doubled the price of imported woollen fabrics during the past two or three years.

After 1931, over half a dozen new factories were established in Shanghai, but these mills are equipped with a moderate capital and engaged exclusively in the manufacturing of fleece-linings only.

PRESENT CONDITIONS

At present there are 17 wool factories operating in Shanghai, and they may be classified into three categories; the fleece-lining factories, the woollen cloth mills and the rug factories. Details of these factories are tabulated as follows:

	Established	Output
Chang Hua (章華)	1924	Woollen cloths and worsted
Hsien Ta (先達)	1929	Plain and striped fleece-linings
Sheng Ta (勝達)	1926	" "
Chung Kuo Wei I (中國唯一)	1926	" "
Wei Lun Mill No. 1 (緯綸第一廠) ...	1927	" "
Wei Lun Mill No. 2 (緯綸第二廠) ..	1927	Woollen cloths
Ta Hua (大華)	1929	Plain and striped fleece-linings
Hung Fa (鴻發)	1929	" "
Ta Chang (達昌)	1929	" "
Tien I (天益)	1929	" "
Ta Nan (大南)	1930	" "
Ta Chung Kuo (大中國)	1931	" "
Hua Tung (華東)	1931	Rugs and carpets
Ta Pei (大北)	—	" "
Heng Feng Yung (恆豐永)	—	" "
I Chang Heng (義昌恆)	—	" "
Kung I Chen (公義成)	—	" "

OUTPUT

Machinery forms the most expensive part of the equipment of a woollen mill, as the raw wool goes through a long series of processes, each one of which is performed by special machinery. A mill is usually equipped with machines for sorting, washing, scouring, opening, carding, scutching, and combining wool.

The Chang Hua mill is equipped with machines of all description, and they are mostly of Belgian and German make. It has three sets of carding machines with the other necessary plant for dealing with raw wool, each capable of turning out 300 pounds of finished wool every day. Both the Chang Hua and Ta Hua mills have 95 looms, each with a capacity of from 10 to 20 yards of cloth every eight hours. Taking the daily hours of labor at eight and the

number of working days in a year at 300, the total output of these two mills would be in the neighborhood of 400,000 yards.

An ordinary machine costs between Tls. 3,000 and Tls. 4,000, but certain special machines cost as much as Tls. 15,000 each. The simpler and lighter machines cost from one to three thousand taels. All these figures refer to machinery of European make. Some Chinese ironworks like the San Sing Cotton Mill and Iron Works (三星棉鐵廠), and the Hsien Ta Iron Works (先達鐵工部) turn out similar machines at much lower prices, some selling at as low as Tls. 500.

ORGANIZATION

In such large mills like Chang Hua and Ta Hua, the operation is controlled by a mill manager, under whom are the technical experts, foremen, etc. In addition to the mill manager and his technical assistants there is the mill accountant, who has charge of accounts but is under control of the Company's chief accountant, and an officer to handle general affairs who is subordinate to the mill manager. The whole mill is divided into departments, each in charge of an officer with assistants.

WORKERS AND WAGES

The total number of workers employed by all the woollen factories in Shanghai is about 3,000. In the Chang Hua and Ta Hua mills, half of the total number of hands employed are women, and no children are engaged. About 60 per cent of the male operatives are permanently employed, while the employment of female operative (with th exception of foremen) is usually temporary. Most of the factory hands are natives of Chekiang and Kiangsu provinces, although the northern provinces are also represented. The northerners are mostly employed in preparing raw wool, since many of them have had previous experience at this work, while the natives of Chekiang and Kiangsu are mostly engaged in weaving, dyeing, and finishing.

The ages of operatives range from about 16 to 40, and no apprentices or children are employed in the mills.

The working day ranges from eight to nine hours, and work is suspended on festival days and public holidays. Operatives work on day shift only, and wages are paid monthly, but those temporarily employed are paid every fortnight.

Mechanics in charge of machinery are the highest-paid, drawing monthly wages of from $60 to $100, skilled male operatives in the drawing and spinning department get about $50 a month, and an ordinary laborer about $20. Women are employed in such work as wool-sorting, slubbing, roving, warping, weaving, and cloth mending are paid at piece-rate, wages averaging 40 cents a day for slubbing or roving, and 60 cents for warping. Weavers are paid 40 cents for every 10 yards of cloth, their wages naturally depending on individual skill and experience. Wool-sorters are divided into raw hands and trained workers, the former earning about 30 cents a day and the latter 50-60 cents. Women work under forewomen, who are permanently employed at a wage of about $20 a month. The hands working in the dyeing and packing departments are men, drawing monthly wages of from $20 to $30.

Wages are raised from time to time with the increase in the cost of living. The permanent employees are provided with free board, and those doing more important work are also provided with lodging. Bonus amounting to two days' wages is given to every worker who has had no days off during the month and if a workman losses no time throughout the year he is entitled to draw an extra month's wages at the end of the year. Allowances are also granted toward medical or funeral expenses. Relations between the workers and the management are very cordial; no feelings of discontent have been manifested, no strike has taken place, and the workers have not organized a union, nor have they affiliated with any outside labor organizations.

RAW MATERIALS

The chief raw materials used in the woollen mills are camel's wool, sheep's wool, dyestuffs and cotton yarn. Camel's wool is obtained from Kuihua (歸化) and Paotow (包頭), with Tientsin as the chief transshipping center. The wool is of two varieties, the *shang mao*

(上毛), wool sheared from the animal's back and is chiefly used in weaving rugs, and the *hsia mao* (下毛), wool sheared from the animal's abdomen part and is suitable for weaving woollen cloths. According to a recent investigation, the country's total production of camel's wool is about 60,000 piculs, of which one-half is consumed by domestic mills.

Sheep's wool is either obtained from the Chinese provinces or imported from Australia. Wool imported from the latter is known as the Merino or Botany wool. Chinese wool is of different varieties: The *chua mao* (抓毛) or the "combed" wool is a product of Hopei, Suiyuan, Paotow and Shansi. It is sold at over $40 a picul. Its fibre is two to three inches long, and is fine and elastic. Therefore, it is particularly good for weaving serge, fine woollen cloth and camlet. The *chun mao* (春毛) or the "spring" wool is sheared during spring. The places of production are Mongolia, Hopei and Honan. Its fibre is fine and glossy, and is suitable for weaving fine woollen fabrics. The *chiu mao* (秋毛) or the "autumn" wool is collected during autumn. The chief places of production are Kalgan, Shensi and Shansi, and is sold at over $30 a picul. The "autumn" wool is much inferior in quality. Its fibre is short and stiff, and is only fit for weaving carpets and worsteds. The *han yang mao* (寒羊毛) or the "cold" wool is chiefly produced in Honan, Shantung and Shansi. It is considered as the best grade among the different kinds of home produced wool. Its fibre is fine, short, white, bright and elastic. It is, therefore, suitable for weaving fine woollen cloths, and its price ranges from $50 to $60 per picul. The *Hsining mao* (西寧毛) is a product of Kansu, Chinghai and Suiyuan. The fibre is about five to six inches long, and its color is white and bright. It is chiefly used for weaving worsteds, and its price runs from $50 to $60 per picul. The *kao mao* (羔毛) or lamb's wool is produced in Shansi, Shensi and Suiyuan. It is coarse and stiff, and resembles very much the so-called *chiu mao* or autumn wool. It is only good for weaving coarse carpets and rugs, and its price is over $40 per picul. The *hu yang mao* (胡羊毛) is produced in southern provinces, and its quality is considered to be inferior to that produced in northern districts. Its price varies from $50 to $60 per picul. Australian wool is

ordered through local foreign firms, Freight and insurance are paid by the importer, while the buyer pays Customs duty. The price is one to two taels per pound.

Dyes used are either imported from Germany or obtained from Kwangtung, Hopei, Honan and Shantung. Those imported from abroad are prepared dyes which are ready for use at any moment, while those obtained at home are natural dyes, which must be properly mixed before use.

The other raw material used by woollen cloth mills is cotton yarn, which is chiefly the output of local cotton mills and in combination with wool is used in weaving fabrics of inferior grade. The counts of the cotton yarn used vary from 10 to 42, but 20 is the most common.

PRICE

Formerly, only fleece-linings were produced by the woollen factories in Shanghai, but at present, such mills like Chang Hua and Ta Hua are able to produce many kinds of woollen piece goods. The price of the various products is as follows:—

Single ply woollen yarn	₮1.03 per lb.
Four-ply worsted	₮1.5–₮2.04 „ „
Tweeds	₮3–₮7 per yd.
Overcoatings	₮3–₮4 „ „
Ventians	₮4–₮5 „ „
Flannel	₮3 „ „
Blanket	$5–$18 per piece
Long Ells	₮3.06 per yd.
Imperials	₮2.05 „ „
Khaki cloth	₮2.05 „ „
Fancy Venetians	₮6–₮7 „ „
Striped fleece lining	₮2.02 „ „
Plain fleece lining	₮1.05 „ „
Rug	$1.30-$1.70 per square ft.

MARKET

About 70 or 80 per cent of the product is consumed locally in Shanghai, and the remaining is exported to South China and Hankow. With the exception of striped fleece-lining, nearly nothing is shipped to the North. The total value consumed amounts to over $2,000,000 a year, and the Chang Hua Mill alone sells about $700,000 or $800,000.

CHAPTER V

KNITTING INDUSTRY

KNITTING as a commercialized industry in China is of recent growth, and even knitted goods from abroad were not seen on the Chinese market until thirty years ago, when German underwear and hosiery made their first appearance. After 10 years of popular selling, English American and Japanese goods came quickly in succession The imported goods came in such quantities that Chinese merchants very soon came to realize the importance of the industry, and the possibility of profitably introducing it into China. At first only hand-machines were employed, these being used for making hosiery, and in the first year of the Chinese Republic (1912) power-driven machinery was inrtoduced by the Ching Hsing factory (景星針織廠) in Shanghai and the Chin Pu factory (進步針織廠) in Canton. Since the Great War in 1914, which caused a sharp decline in imports of knitted goods, the development of the domestic industry has been so rapid that many Chinese industrialists seized the opportunity and invested money in the knitting business.

PRESENT CONDITIONS

Shanghai is the center of knitting industry of Kiangsu Province. In Shanghai and its vicinities, knitting factories are also found in Nanhui, Wusih, Sungkiang, Chinkiang and Wuhsien. The following table shows the details of knitting factories in the various cities of the Province:—

	No. of Factories	Capital	No. of Workers	No. of Machines
Shanghai	136	$1,400,100 ₮45,500	8,755	——
Nanhui	48	$49,980	3,331	2,516
Wusih	33	180,000	3,000	2,000
Sungkiang ...	13	35,200	1,309	1,630
Chinkiang	8	1,250	49	——

Wuhsien	6	21,300	13	356
Luho	1	——	8	20
Chuyung	1	——	——	13
Fenghsien	1	800	20	20

CLASSIFICATION

Generally knitting mills in Shanghai may be classified into five distinct categories as follows:

Hand-machine hosiery mills.—These are small factories each equipped with a few machines, which may be called "sweat shops." The number of such factories is so numerous that it is hard to ascertain. According to the investigation conducted in May, 1932, there were about 80 such factories in Shanghai. The total number of machines installed was around 1,000, and the anuual production is about 600,000 dozen.

Hand-machine singlet mills.—These factories engaged in the making of singlets, scrafs, gloves, and jackets. These mills are mostly established in Shanghai, where over 20 mills were found in May, 1932. They were equipped with 200 machines and the annual output amounted to over 100,000 dozen.

Hand and power machine hosiery mills.—These mills are equipped with both hand and power machines. Hand machines are used exclusively in weaving hosiery, while other works are done with power machines. They are mostly located in Shanghai, where it has over 10 mills, equipped wiht 1,200 machines with an annual production of 400,000 dozen.

Power machine hosiery mills.—These mills are all located in Shanghai, where over 20 mills are operating. They are equipped with a total of 1,200 machines, each is capable of producing five dozen of mercerised socks or three dozen of silk socks in every 10 hours. The annual production is estimated at over 4,000,000 dozen.

Power-machine singlet mills.—These mills are found in Shanghai only. About 10 mills are now in operation, equipped with 120 machines, and the total output is about 400,000 dozen a year.

Speaking of their nature, the knitting mills in Kiangsu can also be classified into three classes: (1) those with their own mills and some of them equipped with power machines, (2) those with a few machines and engaged in knitting work for others on a contract basis, and (3) those having their own mills but at the same time loan out machines to the neighboring farmers and pay them by piece rate. Mills under the first category are operating on a comparatively large scale. There are 130 such mills operating in Shanghai and over 30 in Wusih. Mills under the second class are mostly located in the interior cities and the number is so numerous that no accurate figure being available. Mills under the third category are very common in Wusih and the industry is pursued by the farmers as a secondary occupation. Thus, it is impossible to have accurate statistics in regard to the number of weavers and the amount of production.

CAPITAL

Knitting mills in Kiangsu are mostly organized on the single ownership form, with partnership second, and very few corporations. Therefore the capital of the various mills is usually very small, except the Pioneer Knitting Mill (中華第一針織廠), Foot-Ease Hosiery Manufacturing Company (足安電機襪廠), and Jen Yu No. 2 Knitting Mill (人餘第二針織廠) of Shanghai, each of which has a capital of $200,000. Details in regard to the distribution of capital among the various mills in Kiangsu are as follows:—

	No. of Mills in Shanghai	No. of Mills in Nanhui	No. of Mills in Other Cities	Total
Under $100	—	—	—	—
$101-$500	17	21	10	48
$501-$1,000	13	13	9	35
$1,001-$2,000	13	8	22	43
$2,001-$3,000	15	2	8	25
$3,001-$4,000	5	—	2	7
$4,001-$5,000	11	1	4	16
$5,001-$6,000	2	1	2	5
$6,001-$7,000	3	—	2	5
$7,000-$8,000	1	—	1	2

$8,001-$9,000	—	—	—	—
$9,001-$10,000	9	—	1	10
$10,001$20,000	7	—	—	7
$20,001-$30,000	7	—	—	7
$30,001$40,000	2	—	—	2
$40,001-$50,000	—	—	2	2
Over $50,001	10	—	—	10
Total	115	44	63	222

MACHINERY

With the exception of comparatively larger mills in Shanghai, where power-driven machines are used, most of the factories used hand machines, though the capacity of the former is six times higher than the latter. The following table shows the varieties of machines used by various mills in the Province together with their price and output capacity:—

	Make	Price	Output per Hour
Cotton hosiery machine (h)	Chinese	$250	2 pairs
"K" hosiery machine (p)	British	₹1,700	6 „
"B" hosiery machine (p)	American	900	6 „
"C" hosiery machine (p)	„	900	6 „
Welting machine (p)	„	650	6 „
Sewing machine (p)	„	600	13 dozen
Silk hosiery machine (p)	American	70,000	1 „
Yarn reeling machine (h)	Chinese	$280	24 lbs.
Silk reeling machine (h)	„	280	24 *liang*
Finishing machine	Chinese	$700	40 „
Imitation "B" hosiery machine (p)	„	₹400	6 pairs
Imitation Welting machine	„	350	6 „

As to the hand-machines used in the interior cities, the average price is about $14 to $18 each, while those manufactured in Sungkiang are sold at $10 to $12 only. The distribution of the number of machines in various mills is as follows:

No. of Machines	No. of Mills in Shanghai	No. of Mills in Nanhui	No. of Mills in Other Cities	Total
Under 10	20	—	1	21
11-20	22	3	10	35
21-30	18	5	9	32
31-40	16	2	2	20
41-50	12	3	2	17
51-60	5	6	6	17
61-70	5	1	2	8
71-80	4	3	5	12
81-90	1	1	3	5
91-100	4	4	6	14
101-200	10	5	9	24
Over 201	3	—	4	7
Total	120	42	59	221

WORKERS AND WAGES

Owing to the fact that most of the operatives engaged in knitting work in the interior part of the Province are farmers and their family members who pursue the industry as a sideline, it is impossible to get the exact number of workers employed by all the knitting mills. According to estimate, the approximately number of workers is put at 16,000, of which over two-thirds are females. The distribution of the workers among the various mills is as follows:—

No. of Workers	No. of Mills in Shanghai	No. of Mills in Nanhui	No. of Mills in Other Cities	Total
1-10	20	—	11	31
11-20	28	4	3	35
21-30	21	7	4	32
31-40	8	8	1	17
41-50	9	3	1	13
51-60	6	3	1	10
61-70	6	6	—	12
71-80	3	2	—	5
81-90	1	2	2	5
91-100	1	3	—	4
101-500	26	9	4	39
Over 500	1	—	—	1
Total	130	47	27	204

Wages are usually paid on piece work basis. Generally, in Shanghai, an ordinary worker receives from $12 to $20 per month, in Wusih, $0.28 to $0.33 per dozen, in

Nanhui, 0.15 per dozen, in Sungkiang, $0.22 per dozen or $6 to $12 per month, and in Wuhsien, $0.20 per dozen.

RAW MATERIALS AND ACCESSORIES

The chief raw materials used by the knitting mills in Kiangsu are cotton yarn, silk, and rayon, while the accessories consists of dyes, caustic soda, and bleaching powder. Cotton yarn under 60-count are obtained from Chinese cotton mills, while those over 60-count are imported from abroad. Silk, which is used in very large quantities in making silk hose, is almost the only raw material supplied exclusively from Chinese sources. Next in importance to cotton yarn and silk for making hose is rayon which is entirely imported from abroad, and its price is almost two-thirds cheaper than silk. Wool used in making woollen hose, underwears, scarfs, and caps, is mostly imported from abroad, as Chinese wool is not fit for such purpose. Dyes come almost solely from Germany, at an average of seven or eight taels per catty of good quality. Soda used for mercerising cotton yarn comes from England, the United States, and Japan, and costs about 15 taels per picul, but recently the Tien Yuan Electro-Chemical Works (天原電化廠) has supplied local mills with Chinese-made soda. This factory also manufactures bleaching powder to take the place of the article imported from Germany and Japan, but the output being limited, foreign powder is still used. China produces a small quantity of needles for hand-looms, while those for power-driven machines are imported at prices ranging from Tls. 40 to Tls. 200 per thousand. The following table shows the different kinds of raw materials used by the knitting mills in the Province together with their makes and prices:—

	Make	Price	Quantity Needed for One Dozen of Hose
First quality wool	British & German	₮4 per lb.	1¼ lbs.
Second quality wool	,,	₮2 ,, ,,	0.75 lb.
Silk	Chinese	₮920 per picul	10 *liang*
Rayon	Italian & Netherlands	₮2 per lb.	9 ,,
20-count cotton yarn	Chinese	$0.675 per lb.	2 lbs. (double thread)
32-count cotton yarn	Japanese	$0.905 ,, ,,	1½ lbs (single thread)
40-count cotton yarn	,,	$0.908 ,, ,,	2 lbs (double thread)
60-count cotton yarn	,,	$1.35 ,, ,,	1 lb. (,, ,,)
Dyes	German	₮0.70-₮4 ,, ,,	0.04-1 *liang*
Bleaching powder	,,	₮0.31 ,, ,,	0.7-0.8 *liang*
,,	Chinese	₮0.13 ,, ,,	1.5 *liang*

The distribution of the value of raw materials consumed by the various mills is as follows—

	No. of Mills in Shanghai	No. of Mills in Other Cities	Total
Under ₮5,000	16	19	35
₮5,001-₮10,000	13	10	23
₮10,001-₮20,000	16	13	29
₮20,001-₮40,000	6	1	7
₮40,001-₮50,000	6	—	6
₮50,001-₮60,000	3	2	5
₮60,001-₮70,000	2	—	2
₮70,001-₮80,000	4	—	4
₮80,001-₮90,000	—	—	—
₮90,001-₮100,000	3	—	3
₮100,001-₮150,000	3	2	5
₮150,001-₮200,000	4	1	5
Over ₮200,001	5	—	5
Total	98	57	155

OUTPUT

The variety of output and its respective quantity of the various knitting mills in the Province are as follows:—

Variety	Annual Output (dozen)	Value
Shanghai:		
Hosiery	3,761,934	——
Underwears	166,390	——
Gloves, scarfs, and caps	100,000	——
Wusih: Hosiery	1,500,000	$2,250,000
Sungkiang: Hosiery	392,000	₮588,000
Chinkiang: Hosiery	17,000	$22,500
Wuhsien:		
Hosiery	31,000	86,000
Scarf	200	1,700
Underwear	200	1,100
Luho: Hosiery	5,400	10,800
Chuyung: Hosiery	2,400	——
Fenghsien: Hosiery	4,000	4,000
Nanhui: Hosiery	12,100	23,500
Peihsien: Hosiery	4,000	6,000
Suchien: Hosiery	106,000	162,000

Distribution of the output capacity among the various mills is as follows:—

Nanhui, 0.15 per dozen, in Sungkiang, $0.22 per dozen or $6 to $12 per month, and in Wuhsien, $0.20 per dozen.

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	Make	Price	Quantity Needed for One Dozen of Hose
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Second quality wool	,,	₹2 ,, ,,	0.75 lb.
Silk	Chinese	₹920 per picul	10 *liang*
Rayon	Italian & Netherlands	₹2 per lb.	9 ,,
20-count cotton yarn	Chinese	$0.675 per lb.	2 lbs. (double thread)
32-count cotton yarn	Japanese	$0.905 ,, ,,	1¼ lbs (single thread)
40-count cotton yarn	,,	$0.906 ,, ,,	2 lbs (double thread)
60-count cotton yarn	,,	$1.35 ,, ,,	1 lb. (,, ,,)
Dyes	German	₹0.70-₹4 ,, ,,	0.04-1 *liang*
Bleaching powder	,,	₹0.31 ,, ,,	0.7-0.8 *liang*
,,	Chinese	₹0.13 ,, ,,	1.5 *liang*

The distribution of the value of raw materials consumed by the various mills is as follows—

	No. of Mills in Shanghai	No. of Mills in Other Cities	Total
Under ₮5,000	16	19	35
₮5,001-₮10,000	13	10	23
₮10,001-₮20,000	16	13	29
₮20,001-₮40,000	6	1	7
₮40,001-₮50,000	6	—	6
₮50,001-₮60,000	3	2	5
₮60,001-₮70,000	2	—	2
₮70,001-₮80,000	4	—	4
₮80,001-₮90,000	—	—	—
₮90,001-₮100,000	3	—	3
₮100,001-₮150,000	3	2	5
₮150,001-₮200,000	4	1	5
Over ₮200,001	5	—	5
Total	98	57	155

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Hosiery	31,000	86,000
Scarf	200	1,700
Underwear	200	1,100
Luho: Hosiery	5,400	10,800
Chuyung: Hosiery	2,400	——
Fenghsien: Hosiery	4,000	4,000
Nanhui: Hosiery	12,100	23,500
Peihsien: Hosiery	4,000	6,000
Suchien: Hosiery	106,000	162,000

Distribution of the output capacity among the various mills is as follows:—

	No. of Mills in Shanghai	No. of Mills in Other Cities	Total
Under ₮5,000	10	14	24
₮5,001-₮10,000	9	8	17
₮10,001-₮20,000	16	9	25
₮20,001-₮30,000	13	8	21
₮30,001-₮40,000	8	9	17
₮40,001-₮50,000	12	9	21
₮50,001-₮60,000	5	6	11
₮60,001-₮70,000	3	3	6
₮70,001-₮80,000	1	—	1
₮80,001-₮90,000	2	1	3
₮10,001-₮100,000	3	—	3
₮100,001-₮150,000	4	—	4
₮150,001-₮200,000	5	—	5
₮200,001-₮250,000	2	—	2
₮250,001-₮500,000	5	2	7
Over ₮500,001	2	—	2
Total	100	71	171

PRICES

The prices of knitted goods are differed in different places. The following table shows the price per dozen current on the Shanghai market:—

	Highest	Lowest	Average
Cotton hose	₮5.50	₮3.00	₮2.00
Silk hose	20.00	11.00	8.00
Woollen hose	9.50	5.00	3.00
Summer singlets	15.00	9.00	5.00
Summer drawers	6.50	3.50	2.00
Winter singlets	15.00	12.00	9.00
Winter drawers	15.00	11.00	8.50
Woollen sweaters	55.00	36.00	14.00
Woollen drawers	40.00	25.00	12.00
Gloves	15.00	10.00	5.00
Scarfs	25.00	20.00	9.00
Caps	7.00	4.00	2.00

MARKET

Aside from consumption throughout the country, a considerable quantity of the knitted goods produced in Kiangsu Province is exported abroad. The following table shows the import and export figures for hosiery and underwears passing through the port of Shanghai during the past 12 years ending 1932:—

	Import		Exports					
				Hosiery			Underwears	
	Hosiery	Underwears	To Foreign Countries	To Ports	Total (Incl. Re-exports)	To Foreign Countries	To Ports	Total (Including Re-exports)
1913	1,394,085 doz.	148,858 doz.	2,810 doz.	2,651 doz.	6,438 doz.	656 doz.	415 doz.	750 doz.
1918	857,412 doz.	90,293 doz.	18,222 doz.	185,044 doz.	209,103 doz.	348 doz.	10,984 doz.	2,322 doz.
1922	8,274 pls. 11,734 doz.	679 pls. 69,659 doz.	509 pls. 18,790 doz.	6,385 pls. 260,657 doz.	7,113 pls. 287,482 doz.	1,330 doz.	7,210 doz.	8,640 doz.
1923	7,815 pls. 1,679 doz.	270 pls. 53,025 doz.	914 pls. 30,582 doz.	9,862 pls. 389,378 doz.	10,765 pls. 432,868 doz.	1,204 doz.	15,145 doz.	16,404 doz.
1924	5,311 pls. 1,127 doz.	75,182 doz. 683 pls.	1,184 pls. 37,463 doz.	373,958 doz. 9,414 pls.	422,645 doz. 10,623 pls.	3,357 doz.	19,901 doz.	23,498 doz.
1925	3,128 pls. 8,592 doz.	69,497 doz.	1,240 pls. 50,633 doz.	10,202 pls. 380,377 doz.	11,437 pls. 459,189 doz.	6,554 doz.	18,656 doz.	25,579 doz.
1926	1,114 pls.	110,177 doz.	244,984 doz.	1,926,025 doz.	2,179,847 doz.	13,016 doz.	19,632 doz.	32,969 doz.
1927	425 pls. 3,460 doz.	77,173 doz.	313,597 doz.	2,115,624 doz.	2,230,387 doz.	29,349 doz.	19,552 doz.	49,811 doz.
1928	223 pls. 12,725 doz.	162,802 doz.	329,834 doz.	2,337,648 doz.	2,688,946 doz.	48,915 doz.	30,087 doz.	87,319 doz.
1929	54 pls. 17,781 doz.	123,484 doz.	398,051 doz.	3,142,244 doz.	3,544,476 doz.	113,040 doz.	52,788 doz.	172,431 doz.
1930	18 pls. 10,931 doz.	181,341 doz.	169,493 doz.	133,316 doz.	303,523 doz.	150,148 doz.	68,604 doz.	223,732 doz.
1931	4 pls.	104,133 doz.	170,180 doz.	101,776 doz.	162,034 doz.	151,832 doz.	103,896 doz.	264,938 doz.

In regard to the various countries where the Kiangsu knitted goods are consumed, no accurate figures are available. As the export from Shanghai occupies 96 per cent of the country's total export of this article, the following figure, which represent the export from all ports in China, may give a rough idea about the Shanghai's share in the export of cotton hosiery.

	1929 (Hk. Tls.)	1930 (Hk. Tls.)	1931 (Hk. Tls.)
Hongkong	53,076	90,345	66,280
Singapore, & F.M.S.	51,573	45,319	55,537
Java, etc.	18,033	21,124	35,726
Philippine Islands	25,830	37,267	57,963

TRANSACTIONS

Many large mills have their own sales departments in the business section of Shanghai for handling retail as well as wholesale business, while the small factories sell their goods on the premises. There are also some factories which cater only for the trade, their output bearing the trade marks and names of their clients. Goods are also sold through brokers to habadashers and department stores, accounts being settled either on delivery or three times a year in May, September, and December according to the credit of buyers. Sales to merchants outside Shanghai are handled through brokers, duties and freight being paid by the purchaser.

TAXES

Before the abolition of *likin* all cargo transported from one home port to another had to pay a tax of five per cent *ad valorem* in addition to 2.5 per cent surtax and various other imposts and duties at the point of destination. Since the promulgation of regulations extending privileged treatment to Chinese machine-made products, these may be also exempted from the five per cent export duty on application to the Ministries of Finance and Industry. On the abolition of likin in 1931 the tax on Chinese machine-made goods transhipped from one home port to another was further reduced by collecting wharfage dues only, but for goods to be exported and which are not eligible for special treat-

ment, all export duties have to be paid as usual. Although knitting mills no longer pay direct tax on their output, they pay duty on the raw materials used in the form of consolidated tax, the rate for cotton yarn being Tls. 3.75 per bale. When the manufactured goods are sent out of the factory no further tax is levied, and on presenting the receipt for consolidated tax paid on the cotton yarn, the tax bureau issues a permit passing the consignment of manufactured goods.

CHAPTER VI

OTHER SPINNING AND WEAVING INDUSTRIES

IN ADDITION to the major spinning and weaving industries described in the previous Chapters, in the Province is also found a number of secondary industries of the similar nature. The following are some of the more important ones:—

LACE

The lace industry in Kiangsu Province was started about a couple of generations ago, when the peasant women and girls of Siccawei (徐家匯), a suburb of Shanghai, learned the art from the Jesuit sisters at the nearby French Catholic Church. The increasing demand for lace from abroad gradually led to the industry spreading to Pootung (浦東) across the Whangpu River from Shanghai, Chuansha and Wusih, where many women and girls deserted their primitive looms and took up lace-making as a full time occupation, giving it a position in domestic economics which weaving never had. During the prosperous years of 1911-14 the output of lace from Wusih alone amounted to the huge sum of $17,000,000, but the outbreak of the World War in 1914 brought about a severe slump. Although a gradual recovery has been witnessed, the high protective tariff in the United States, which is the largest consumer of Chinese lace, has hindered the development of this handicraft industry.

PRESENT CONDITIONS

According to a recent investigation there are altogether 25 lace manufacturing firms operating in the Province. The following table shows the name, location, capital, and annual output of these concerns:

	Location	Capital	Annual Output
Tai Chu Chi (戴竹記)	Siccawei, Shanghai	$400,000	$300,000
Cheng Wen Ming (程文明)	" "	400,000	200,000

Chang Ken Chuan (張根泉)	〃 〃	20,000	50,000
Chu Shen Po (瞿申伯)	〃 〃	10,000	50,000
Chu Keng Tao (褚耕陶)	Chaohochin (漕河涇)	10,000	50,000
Chang Po Hsun (張伯勳)	Kungchen, Chuansha (巩鎮)	20,000	50,000
Chang Chin Mei (張錦梅)	〃 〃	20,000	50,000
Chu Yun Chuan (朱允泉)	〃 〃	10,000	30,000
Lu I Fu (陸益夫)	Chaochen, Chuansha (曹鎮)	10,000	30,000
Ku Lung Yang (顧龍樣)	Hochingchen, Chuansha (合慶鎮)	10,000	50,000
Lu Wen Shen (陸文生)	〃 〃	10,000	20,000
Chiang Shao Feng (蔣少峰)	Chuansha City 〃 〃	5,000	10,000
Chen Ping Ho (陳秉和)	Kiangchia Road, Nanhui (江家路)	8,000	20,000
Sung Chin Pin (宋敬賓)	〃 〃 〃	8,000	10,000
Tu Yun Hsiang (杜雲湘)	Chenchiachiao, Nanhui (陳家橋)	20,000	40,000
Kung Hsi Chang (龔錫祥)	Changkiangsan, Nanhui (張江衖)	20,000	40,000
Huang Shi Chin (黃拭金)	Chaochiachiao, Changshu (趙家橋)	20,000	100,000
Huang Shen San (黃省三)	〃 〃	10,000	50,000
Lin Chun Yung (林椿榮)	Tsingpu City	10,000	20,000
Yang Waung Ken (楊望根)	Chukiako, Tsingpu (朱家角)	5,000	20,000
Shi I (時 義)	Sungkiang	10,000	10,000
Shen Tsu Kang (沈子康)	Nanchiao, Fenghsien (南橋)	30,000	100,000
Jih Hsin (日 新)	Wusih	——	70,000
I You (益 友)	Wusih	——	——
Yen I Chi (嚴義記)	Wusih	——	——

WORKING CONDITIONS

As lace-making is a home industry, practically all the manufacturers mentioned above are merely agents who furnish frames, needles, and thread to those who actually make the lace. Those engaged in this industry are mostly women and girls of peasant families, who thus add to the

wages earned for work in the fields. They are paid on a piece-rate basis. The company for which they work usually issues an account-book in which the quantity of thread supplied is entered, and when the lace-maker completes her work, the finished article is submitted to the company, which acknowledges receipt in the account-book. Remuneration is generally calculated by the yard, and is paid immediately upon return of the finished lace. The average daily wage of a skilled worker is about 20 cents, while an ordinary hand will earn 10 cents. There is, of course, no definite number of working hours; work is done according to a specified pattern, and it is paid for on passing inspection and more thread supplied.

RAW MATERIALS

The raw materials used in lace-making consist chiefly of white and ecru linen, imported from Great Britain, crochet cotton, imported from France at $4 per box of 12 balls, and thread, which is either supplied by Chinese cotton-mills or imported from France and Great Britain. The D.M.C. brand is the most popular crochet cotton used, though in Wusih the I.P.C. (No. 40) is also used. Thread turned out by Chinese cotton-mills is of coarser quality, and is quoted at $220 per bale.

VARIETIES OF LACE GOODS

Laces produced in Kiangsu are of five different varieties. The "linen lace" (麻布花邊) is really drawn-thread work done on imported linen. The cloths are of different shapes and sizes, varying from 15 in. to 90 in. in width.

A second variety is known as "yellow thread lace" (黃線花邊), and is similar to the "linen lace" except that coarser thread of 10-count is used. "Hook lace" (鈎子花邊) is from one to two inches in width and used as trimming for ladies' underwear. "Fillet lace" (緋利花邊) is long lace of various widths used as curtains, draperies, etc. The fifth variety is known as "close-thread lace" (密線花邊), which is done by cutting out pieces of linen, and inserting in their place very finely made lace of the same size and shape.

PROCESS OF MANUFACTURE

There are two distinct processes in lace-making, the first being the netting, and the second the addition of floral decoration. Netting is either made by a special group of workers, or made at the same place as the decoration but by a separate group of women. In the former case the lace companies buy the netting and distribute it to the makes for decoration, while in the latter case the companies buy the thread and distribute it to the makers of netting.

Only two kinds of lace are made where no netting is required, "hook lace" and "linen lace." The former is made by a machine similar in appearance to a weaving spindle but much smaller, but the making of "linen lace" is more complicated. First the linen is cut to the size required before designs are printed in light blue which can be washed off very easily. This work is done by the lace companies, which distribute the printed linen to the workers to be embroidered. When completed the cloths are returned to be washed, bleached, and ironed, ready for market.

Kiangsu lace is sold at various prices, according to the intricacies of pattern and fineness of work, but the following is a list of approximate quotations:—

	Width in Inches	Length in Inches	Price
Linen lace	72	90	$16.00
Yellow thread lace	72	90	1.80
Fillet lace	72	90	10.00
Hook lace (per yard)	1	36	0.10
Close-thread lace	72	90	80.00

Owing to lack of statistical data no accurate figures are available in regard to the production of lace, but according to those in the trade the average value of lace turned out during the last three years has been about $6,000,000 per annum.

DISTRIBUTION OF EXPORT TRADE

Aside from all the small amount consumed in the home market, the bulk of the lace made in Kiangsu Province is exported. The United States is the largest consumer of Chinese lace, taking over 70 per cent of the total export. The following table shows the value of lace exported from this country during the three years ending 1931. As about 70 per cent of the lace exported from China goes through port of Shanghai, these figures give a proportionate idea of the production in Kiangsu Province:—

Export	1929 (Hk. Tls.)	1930 (Hk. Tls.)	1931 (Hk. Tls.)
Hongkong	34,283	54,763	70,874
Macao	——	130	——
French Indo-China	201	2,034	——
Siam	——	296	——
Singapore, Straits, etc.	12,653	10,229	13,265
Netherlands India	13,922	39,004	84,069
British India	7,824	12,403	29,429
Turkey			1,258
Persia, Aden, etc.	4,805	5,147	——
Egypt			6,194
East Africa	——	——	569
Great Britain	127,289	108,421	147,998
Norway	11,354	13,977	10,717
Sweden	15,435	29,601	51,597
Denmark	11,436	42,118	65.027
Germany	199,270	212,334	309,672
Netherlands	28,753	30,363	9,798
Belgo-Luxemburg Economic Federation	579	2,926	4,410
France	7,850	1,759	459
Greece	——	181	——
Italy	17,375	18,596	2,761
Spain (including Gibraltar)	3,009	68	——
Switzerland	3,231	2,569	850
Austria	12,606	12,472	4,762
Hungary	2.041	41	——
Czechoslovakia	358	726	170
Korea	——	27	150
Japan	5,111	10,386	3,549
Formosa			——
Philippine Islands	3,957	4,663	5,583
Canada	83,923	76,685	104,025

U.S. of America (including Hawaii)	1,898,741	2,327,893	2,484,839
Mexico & Central America (including Panama)	——	2,384	1,071
Cuba	——	4,659	653
South America	64,856	65,046	8,881
Argentina			13,470
Australia	74,852	57,924	42,600
New Zealand			9,989
South Africa (including Mauritius)	59,983	46,232	53,203
Total	2,765,697	3,196,062	3,540,265

TOWELS

It was not until the closing years of the Ching Dynasty the importation of Japanese towels aroused the interest of the public toward this new article. In view of its usefulness and its far surpassing to the old style cloth towels the industry was pursued by Chinese industrialists in a primitive manner in Sungkiang and Wuchin. This marked the beginning of the towel industry in Kiangsu Province. Later in 1917 with the establishment of the Sean You Zoo (三友實業社), the history of towel weaving industry turned to a new page, that is, it was the first modern towel factory ever established in this country. After this a host of other factories sprang into existence during the years of 1919-1925, and the industry was well distributed in the principal cities of the province.

PRESENT CONDITIONS

The towel industry in Kiangsu concentrates in Shanghai, Chuansha, Nanhui, Paoshan, Kiating, Wuchin, Wusih, Sungkiang, and Nantung. Towels are either woven by factories or by workshops owned by master weavers. The former is equipped with machinery and other modern devices, while the latter, wooden looms operated by manual power are used. According to a recent investigation there are over 50 comparatively large towel factories operating in the Province. Their particulars are shown in the following table:

Name of Factory	Factory Address	Established	Capital	No. of Workers	Annual Output (dozen)	Trade Marks
Sean You Zoo (三友實業社)	Shanghai	1917	$2,000,000	—	350,000	Triangle
San Sin Factory (三星) ...	„	——	——	—	210,000	Electric Light
Shun Chang Cotton Weaving Factory (申昌)	Chuansha	1924	$ 10,000	130	18,000	Electric Fan
Ho Shing Cotton Weaving Factory (和興)	„	1930	$ 1,000	21	1,400	No. 1
Mei Hua Cotton Weaving Factory (美華)	„	1930	$ 1,000	15	1,500	——
Cotton Weaving Factory No. I, China Product Co. (中國物產公司棉織第一廠) ...	„	1931	$ 5,000	60	24,000	"September 18th"
Den I Factory (滇益)	„	1927	$ 400	8	1,500	——
Dah Lun Cotton Weaving Factory (大綸)	„	1931	$ 600	15	1,900	——
Ming Hua Branch Factory No. II (明華第二廠)	„	1929	$ 3,000	38	5,000	Hsin Chung (星忠)
Tien Hua Branch Factory No. II (天華第二廠)	„	1920	$ 3,000	31	7,000	Pagoda

Chin Lun Factory No. II (經綸二廠)	Chuansha	1921	$	4,000	48	7,000	Cock
Tsen Hsin Cotton Weaving Factory No. 1 (振心)	„	1912	$	500	11	3,000	——
Lien An Weaving Factory (聯安)	„	1931	$	1,500	21	6,000	——
Ho Chi Towel Factory (鶴記)	„	1926	$	2,400	68	12,000	——
In Chin Chow Towel Factory (印敬舟)	„	1912	$	500	20	3,600	——
Yi Mou Ho Towel Factory (義茂和)	Sungkiang	1912	$	1,000	22	4,500	Dih
Chin I Towel Factory (勤益)	„	1905	$	500	12	1,000	Tripod
Sin Sin Industrial Association (新新)	Wusih	1932	$	1,000	15	4,000	Sin Sin
Chen Hsing Towel Factory (振興)	Chinkiang	1928	$	100	3	$3,000‡	——
Tai Show Chang Towel Factory (泰壽昌)	„	1917	$	200	3	$3,000‡	——
Tsen Yuan Towel Factory (豐源)	„	1927	$	200	3	$2,500‡	——
Lung Yuan Towel Factory (隆源)	„	1926	$	200	5	$2,500‡	——

San Shing Towel Factory (三鑫)	〃	1926	$	200	4	$3,000‡	——
Dah Feng Towel Factory (大豐)	Tsungming	1930	$	2,000	31	10,000	——
Chen Tsi Towel Factory (成志)	〃	1930	$	500	20	3,600	——
Pao Ying People's Factory (寶應平民工藝廠)	Paoying	1919	$	200	31	4,320	Kia Wu
Kiu Chang Towel Factory (九章)	Luho	——	$	400	—	——	——
Huang San Tai Towel Factory (黃三泰)	〃	——	$	500	22	$166,000‡	——
Lin Kuo Siang Towel Factory (林國祥	〃	——	$	500	—	——	——
Orphan's Towel Factory	〃	1922		——	50	720	——
Hen Yu Towel Factory (恆裕)	Yencheng	1927	$	100	11	1,800	Cock
People's Factory (平民工藝廠.)	Founing	1928	$	1,300	32	1,954§	——
People's Factory	Lienshui	1931	$	500	45	——	——
Chiu Tsi Yuan (救濟院) ...	Peihsien	1924	$	5,000	—	1,500	——
People's Factory (平民工藝廠)	Tungtai	1914	$	2,000	15	20,000	◈

Craft Office for Poor People (貧民習藝所)	Kiangpu	1922	$	2,000	—	——	Chi Sin
Nantung (南通)	Nantung	——		——	—	119,000	——
Koo Lan Chi Towel Factory (顧蘭記)	〃	1913	$	600	21	4,200	——
Yun Yu Towel Factory (永餘)	〃	1927	$	5,000	56	12,000	Dragon
Tsai Lan Chi Factory (蔡蘭記)	〃	1927	$	700	28	8,000	——
Teh Chang Weaving Factory (德昌)	〃	1920	$	8,000	110	18,000	Sail Boat, Machine
Ming Hua Weaving Factory (明華)	〃	1929	$	2,000	55	7,500	Hsin Chung (星忠)
Yee Chang Fu Weaving Factory (怡昌福)	〃	1932	$	2,000	62	12,000	Fu (福)
Heng Hua Cotton Weaving Factory (恆華)	〃	1912	$	600	16	2,000	Carp
Chin Lun Cotton Weaving Factory (經綸)	Nanhui	1914	$	50,000	560	100,000	Cock
Tien Hua Towel Factory (天華)	〃	1920	$	4,000	31	18,000	Pagoda

Lun Hua Towel Factory (綸華)	„	1919	$ 1,000	40	25,000	Shuan si (雙喜)	
Hui Ming Factory (惠民) ..	Paoshan	1918	$ 3,000	300	70,000		
Paoshan Cotton Weaving Factory (寶山)	„	1932	$ 3,000	49	40,000	Lightning	
Yeh Chin Towel Factory Factory (業勤)	Wuchin	1910	$ 6,000	240	120,000* 14,000†	囍	
Hsieh Chin Towel Factory (協勤)	„	1929	$ 3,000	130	7,000* 3,440†	—	
Hui Li Towel Factory (惠利)	„	1922	$ 2,000	100	4,000	—	
I Dah Towel Factory (益大)	„	1929	$ 2,000	80	2,000	—	
San Sen Towel Factory (三陞)	„	1931	$ 1,000	40	1,400	—	
San Yuan Towel Factory (三元)	„	1931	$ 1,000	40	1,400	—	

*Face Towels. †Bath Towels.
‡Valued. §Pieces.

CAPITAL

Factories in Shanghai are equipped with largest capital, while those in the interior, from a few hundred dollars to two thousand only. But most of the towel factories in Shanghai do not devote their whole time in weaving towels. They are also engaged in making other kinds of articles such as cotton piece goods, cotton blankets, beddings, etc. Thus the exact amount of capital invested in towel making is still unknown.

MACHINERY

Classified according to the material with which it is constructed the machinery used by the towel factories is generally of three varieties, namely, iron, wood, and iron-wood. Iron machines are most seldom used owing to their high cost, wooden machines, by the small factories in the interior, and the iron-wooden machines are most extensively used. In the former years practically all these machines were imported from Japan, while at present, Chinese made machines are gradually replacing the Japanese product. The following table shows the kinds of machines together with their prices used by the towel factories in Kiangsu Province:—

	Motive Power	Constructing Material	Price
Cloth weaving machine (80 inches wide)	Electricity	Iron	$ 500
Towel weaving machine	„	„	170
Towel-cloth weaving machine	„	„	230
Jacquard machine	„	Iron-wood	120
Woof-making machine (20 spindles)	„	„	150
Warp-making machine	„	„	300
Yarn reeling machine (24 spindles)	„	„	156
Drying machine	„	——	400
Wick making machine (24 spindles)	„	Iron	220
Starching machine	„	„	2,100
Lustering machine	„	„	280
Towel weaving machine	Manual	Iron-wood	55
Cotton weaving machine	„	„	45
Yarn reeling machine (12 spindles)	„	Iron	80
Woof machine (10 spindles)	„	„	80
Warp machine (10 spindles)	„	Wood	70

WORKERS AND WAGES

The total number of workers employed by towel factories in Kiangsu is approximately 2,300. Their wages are either paid according to the piece of work they turn in or according to the time they devoted to the work. But in both cases, they are granted with the privilege of free board and lodging. The scale of wages varies with the kinds of work the workers undertake. Generally speaking in Shanghai a skilled operative is able to get as high as $80 a month, an ordinary hand $45, while an unskilled worker, $15. The following table shows the scale of wages received per day by Shanghai towel workers (male):

	Highest	Lowest
Towel weaving	$2.50	$1.50
Yarn reeling	0.80	0.40
Warp reeling	0.85	0.50
Bleaching	0.80	0.50
Printing and dyeing	2.00	0.50

Female workers receive usually a little less than the male hands, and the apprentices, a monthly allowance of about $2.

RAW MATERIAL

The yarn used in towel making is chiefly of the 6-count, 10-count, 16-count, 20-count, 32-count, 42-count and 60-count varieties. The 16-count yarn being the most extensively used, and practically all bought from the Shanghai mills. Other materials such as the dyestuff, bleaching powder, and other chemicals are imported from abroad.

KINDS OF OUTPUT

Towels turned out by Kiangsu factories are of two kinds, namely, the face towel and the bath towel. The width of a face towel varies from 12 to 17 inches, length from 25 to 34 inches, and the weight per dozen, from 6 to 32 *liang*. The width of a bath towel varies from four to nine feet, and the weight per dozen, from 44 to 180 *liang*. The sizes of face towels vary by one inch in difference,

while that of bath towels, by one foot. Bath towels are always white in color, though red lines are woven in or printed near the two ends, while the face towels are printed with various designs and dyed with various colors.

PRICES

The prices of towels are by no means uniform. The following list shows the different prices fixed by the Sean You Zoo Factory of Shanghai:

	Width in inches	Length in inches	Price per dozen
	12	23	$2.88
"Artistic" face towel	15	30	1.60
	13	38	3.10
"Hygienic" face towel	18	30	2.10
"Liberty" face towel	15	30	2.18
	15	33	2.64
"Double thread" face towel	15	31	4.18
"Fancy" face towel	12	25	1.65
	17	46	6.05
"Single thread" bath towel	24	48	6.60
	36	70	15.40
"Double thread" bath towel	20	38	7.70
	36	70	27.50

OUTPUT

Owing to lack of statistical data, the accurate quantity of towels turned out by Kiangsu factories is unknown. According to a rough estimate the aggregate output during 1932 is put at over 2,000,000 dozen, and it is believed that this estimate is rather conservative.

MARKET

Aside from local consumption, a considerable quantity is also exported to the Straits Settlements and the Philippines. The most popular brands both on the home and the foreign markets being the "triangle" of the Sean You Zoo, "rooster" of the Chin Lun, "electric fan" of the Shun Chang, the character "shan" (山) of the Hui Min, and the "electric lamp" of the San Sin. Shanghai is the chief exporting center of towels produced in this country, handling over 90 per cent of the total export, and Singapore is the chief consumer of Chinese towels, absorbing nearly one-half of the total exported amount. The following table shows the quantity and value of towels exported during the past three years ending 1931:

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	1929	
EXPORTED TO	Dozen	Val. Hk. Tls.
Hongkong	266,243	199,450
Macao	53	36
French Indo-China	2,000	1,350
Siam	13,936	8,963
Singapore, Straits, etc.	241,673	231,576
Netherlands India	19,629	13,969
British India	6,827	5,418
Turkey, Persia, Egypt, Aden, etc.	75	141
Great Britain	86	162
Germany	—	—
Russia, Pacific Ports	2,460	2,040
Korea	177	176
Japan (including Formosa)	—	—
Philippine Islands	67,591	38,033
Canada	254	281
U. S. of America (including Hawaii)	—	—
South Africa (including Mauritius)	—	—
Other Countries	—	—
Total Exported Abroad	621,004	501,595

	1930	
EXPORTED TO	Dozen	Val. Hk. Tls.
Hongkong	293,955	328,414
Macao	216	129
French Indo-China	1,836	1,080
Siam	20,587	12,058
Singapore, Straits, etc.	196,049	156,150
Netherlands India	23,163	18,799
British India	2,431	2,160
Turkey, Persia, Egypt, Aden, etc.	360	307
Great Britain	70	80
Germany	—	—
Russia, Pacific Ports	1,700	1,320
Korea	554	462
Japan (including Formosa)	2	3
Philippine Islands	58,854	32,473
Canada	306	334
U. S. of America (including Hawaii)	117	132
South Africa (including Mauritius)	—	—
Other Countries	—	—
Total Exported Abroad	600,200	453,901

	1931	
EXPORTED TO	Dozen	Val. Hk. Tls.
Hongkong	288,344	210,265
Macao	10,250	6,491
French Indo-China	969	903
Siam	22,825	18,137
Singapore, Straits, etc.	163,768	151,283
Netherlands India	27,855	23,956
British India	2,161	2,022
Turkey, Persia, Egypt, Aden, etc.	——	——
Great Britain	120	458
Germany	772	420
Russia, Pacific Ports	7,804	10,603
Korea	407	326
Japan (including Formosa)	——	——
Philippine Islands	79,345	47,296
Canada	196	229
U. S. of America (including Hawaii)	376	596
South Africa (including Mauritius)	5	14
Other Countries	100	86
Total Exported Abroad	605,297	473,085

MATTING

The matting industry of Kiangsu Province is centered upon Wuhsien and Icheng, 'Hsu" mats (滸蓆) from Hsu-shukuan (滸墅關), a district near Wuhsien, and "Po" mats (樸蓆) from Poshuwan (樸樹灣), a village near Icheng, being known throughout the country. During the latter part of the Tsing Dynasty this business was very prosperous, but with the importation of Japanese matting and the growing popularity of Ningpo and Yuyao (餘姚) mats from Chekiang Province, trade has gradually declined.

The grass used for weaving matting is grown at Hsi-hsiang (西鄉), near Ningpo, and Cherfangchen (車坊鎮), near Wuhsien, and is green in color, growing to a height of four or five feet. Seed is sown in winter and the grass cut the next summer, and from a *mou* of land from 400 to 1,000 catties of grass can be cut. After being dried in

the sun and tied in bundles the grass is sold to *hsi hong* (蓆 行) or matting firms, who either engage workers to undertake the weaving, or buy mats from the farmers.

Owing to absence of statistical data, no accurate figures are available in regard to annual production. The number of weavers in the district of Wuhsien is about 1,450, their aggregate annual net profit being $70,990. In addition to these home-workers there is a factory located near the Panmen Gate (盤 門), known as the Teng Pu Ho Chi Matting Factory (鄧 浦 合 記 草 毯 廠), established in 1931 with a capital of $4,000. This concern employs 114 hands, chiefly recruited from Yencheng, Kiangyin, Wuchin, Wusih and Shantung, and is equipped with 20 weaving machines, the annual output amounting to 20,000 square feet, selling at about 20 cents per foot. About 30 per cent of the output is shipped to Shanghai and sold through the Shen Lin Rattan and Grass Ware Factory (森 林 籐 柳 草 器 廠) at 1008 Avenue Road, while the remaining 70 per cent is exported to foreign countries. Raw material is obtained from Cherfangchen, and the annual consumption amounts to about 10,000 piculs, costing about $4 per picul. The workers are mostly paid by piece-rate, with a few on a monthly basis.

In Shanghai the matting industry is prosperous, and according to recent investigation there are over 100 firms operating in the city, with an aggregate turnover amounting to $3,500,000 a year.

At Icheng the number of matting factories is 60, the total production in 1931 being 500,000 pieces. Calculated at 70 cents a piece, the total value will amount to $350,000.

Apart from local consumption a considerable quantity of matting is shipped abroad, Shanghai being the chief distributing center, with Chinkiang next in importance. The following table shows the quantity and value of matting exported from Kiangsu ports during the three years ending 1931:

	1929		1930		1931	
	Amount (1,000 pcs.)	Value Hk. Tls.	Amount (1,000 pcs.)	Value Hk. Tls.	Amount (1,000 pcs.)	Value Hk. Tls.
Shanghai	128	11,515	142	6,765	195	9,263
Nanking	—	——	1	61	13	1,113
Chinkiang	252	63,000	177	44,250	99	24,750
Soochow	—	——	3	178	1	100

Matting produced in Kiangsu Province is of three varieties, for beds, cushions, and floors. Matting made for beds measures from 15 to 45 inches in width, the broad make benig sold by length at 60 to 70 cents a foot, while narrow matting is sold at about 80 cents per piece.

CANVAS

Canvas was first imported into China from the United States, and having seen what profits were being made, Japanese manufacturers came into the Chinese market, Tieh Mao (鐵錨) or "Iron Anchor" and Hsing Yueh (星月) or "Star and Moon" being the most popular brands. With the demand for home-made products becoming keener, the pioneer Chinese canvas factory, known as the Wei Cheng (緯成), made its appearance, but the product not being good, the factory was reorganized in 1923 and its capital increased from $50,000 to $200,000, the concern being then known as Hua Cheng (華成).

In Kiangsu there are only four large canvas factories and all are in Shanghai, their names being Hua Cheng, San Min (三民), Kuo Min (國民) and Chung Hua (中華).

Canvas is made of 10 count cotton yarn, manufactured mostly from Yuyao, Hankow, Shanghai, or Shensi cotton. The following are the brands of yarn most used by the four factories in Shanghai:—

	Manufacturer	Price per bale
Chin Ch'eng (金城)	Wing On (永安廠)	$157.25
San Yang (三羊)	Yung Yü Ho Chi (永豫和記廠)	154.50
Hung Ho (紅荷)	Ho Feng (和豐廠)	150.00
Chia Ho (嘉禾)	Wing On (永安廠)	145.50

The process of making canvas can be divided into reeling of cotton yarn and thread, warping, and weaving. The first and second processes are usually done by women, reeling being paid for at the rate of 8 cents per package

of cotton yarn with the maximum capacity of seven packages a day, while those reeling thread are paid from $12 to $25 per month. Warping is done by men, who earn about $25 per month. Weaving is also done by male workers at the rate of one dollar per piece (measuring from 80 to 100 yards), the average daily output being about 50 yards, with a monthly bonus of about $10. In some factories the canvas is starched, but the product of the Hua Cheng factory does not undergo this process and is more durable.

Cotton canvas made in Shanghai factories is of three varieties, thin, thick, and special. Under the first heading are the Pa Yu Tse (八紗子), Shih Yu Tse (十紗子), and Shih Erh Yu Tse (十二紗子), each piece being 28 inches wide and 50 yards long. All three are made of two strands of cotton yarn as warp, but the first-named variety has only one strand of cotton yarn as woof, while the second and third have two and three strands respectively. Thick canvas is of six different grades, but all measure 22 inches wide and about 100 yards long. The strands of cotton yarn in the warp and woof in each grade are as follows:—

	Warp.	Woof.
No. 1	7	8
2	7	7
3	6	6
4	6	5
5	5	5
6	5	4

Special canvas is much longer and wider than the two varieties previously mentioned, the maximum width obtainable being 60 inches and the length 300 yards.

Cotton canvas made in Shanghai finds ready markets in Hankow, Tientsin, and the Straits Settlements. According to the Customs returns for 1931 cotton canvas and duck were exported abroad to the extent of 23,429 yards, to Hongkong 6,901 yards, to home ports 260,752 yards, making a total (including re-exports) of 303,367 yards, valued at Hk. Tls. 137,162.

The annual output of the canvas factories in Shanghai is less than 500,000 yards, while the total consumption is far in excess of that amount, so that a very large quantity

of canvas is imported, as shown in the figures from 1927 to 1931:—

	Yards	Hk. Tls.
1927	3,122,584	970,767
1928	3,212,826	1,061,292
1929	3,583,371	1,000,211
1930	3,437,484	1,075,248
1931	4,700,705	1,687,388

Of the canvas imported from abroad Japan contributed the largest proportion; in 1928 her share was 40 per cent of the total, in 1929 57 per cent, and in 1930, 68 per cent, while Great Britain's proportion was 42 per cent in 1928, 26 per cent in 1929, and 20 per cent in 1930. Shanghai is the port through which the largest amount of canvas was imported, representing 46 per cent of the total trade, while the share of Dairen was 13 per cent, Tientsin 9½ and Antung 9 per cent.

ELASTIC

In 1923 the first Chinese elastic factory was established in Shanghai, known as Ching Lun (經綸), but was closed down after a short time. Later, some other factories were started and the output in 1928 was about $100,000, while in 1929 and 1930, with the establishment of more factories, the total rose of $150,000, while in 1931 as the import of foreign goods was checked by the new tariff, the production of the Kiangsu elastic factories was estimated at about $800,000. The following is a list showing their location and other details:

		Location	Established	Output in 1931	Trade-Marks
Chang Cheng	(長城)	Shanghai	1927	$100,000	Great Wall
Mei Teh	(美德)	Shanghai	1927	200,000	"Dragon in Cloud"
Hsin Sze	(新泗)	Shanghai	1928	200,000	"Aeroplane"
Teh Lung	(德隆)	Shanghai	1926	100,000	——
Chang Cheng	(長城)	Shanghai	1930	100,000	——
Ching Mei	(精美)	Shanghai	1931	——	——
Tien I	(天一)	Shanghai	1931	——	——
Hui Chang	(滙昌)	Shanghai	1931	——	——
Mei Lun	(美綸)	Wuhsien	1924	——	——

The machinery running in the Shanghai factories is all of Chinese make, but in the Wuhsien factory German machinery is installed. The following are the prices and approximate capacity of Chinese-made machines:—

	Price	Capacity
Reeling machine	$100	100 oz. of silk
Shuttle bobbin reeling machine	3	300 shuttles
Weaving machine	150	10 pieces of elastic
Spindle frame	20-80	13 pieces of elastic
Bobbin frame	3	200 bobbins

Workers in the Kiangsu factories average about 40 each, and with the exception of weaving all other processes are done with female labour. Wages are paid at piece-rates as follows:—

	Unit	Rate	Average Daily Capacity
Elastic-weaving (iron machine)	Piece	10 cents	12-13 pieces
Elastic-weaving (wooden machine)	Piece	10-25 cents	19 peices
Silk reeling	Ounce	1 cent	100 ounces
Shuttle bobbin reeling	50 shuttles	2 cents	3,000 shuttles
Elastic mending	Piece	2 coppers	30 pieces
Bobbin reeling	Bobbin	½ cent	200 bobbins

From January to May is the busy season, during which working hours are extended two or three hours longer than from June to December, when each shift lasts ten hours.

Cotton yarn, artificial silk yarn, and rubber thread are the raw materials used in making elastic, and with the exception of the first, are imported. The following are the approximate prices of materials and the amount needed in making a gross of elastic, together with the total amount consumed in Shanghai every year:—

	Price	Needed per gross	Consumed per year
Artificial silk yarn	¥350 per box (200 lbs)	2-4 lbs.	400 boxes
Rubber thread	300 per box (100 lbs)	2-3 lbs.	200 boxes
Cotton yarn	300 per bale (40 packages)	1-2 lbs.	100 bales

Elastic is made by first reeling the artificial silk yarn on the bobbin which is to be put on the spindle frame. Wide elastic is made with 100 spindles, medium with 50, and the narrowest with 9 only. The rubber thread is so arranged that with the motion of the spindle elastic is woven to the design and size desired. Fabric made this way is known as "iron machine elastic," but the "wooden machine elastic" is made in a similar way.

The annual output of the Shanghai elastic factories amounts to about 20,000 gross (one gross contains twelve pieces of elastic of 12 yards each), and the output of the factory is 7,500 gross, prices being as follows:—

"Iron Machine Elastic"	4 lb. gross	₮ 6-15 per gross
	7 lb. gross	22-25 per gross
"Wooden Machine Elastic"	7 lb. gross	20-30 per gross

SEWING-THREAD

Formerly only silk thread was used for sewing in China, and cotton or "wood" thread, as it is called on account of its being wound on a wooden reel, was first made in Kiangsu in 1912. In subsequent years a number of other factories came into existence, but most of them were situated in Chapei, Shanghai, and during the Sino-Japanese conflict in Shanghai in 1932 several factories were destroyed. At the present time only six are in operation—Hua Chen (華成), Ho Ping (和平), Hua Chang (華章), Chung Kuo (中國), Hua Shun (華順), and Chung Hua (中華) each with a capital of several thousand dollars. The machinery used in these factories is all made locally, details being as follows:

	Price	Daily Capacity
Yarn reeling machine	$ 4	8 bobbies
Thread reeling machine	$ 10	300 pcs.
Waxing machine	$ 20	1 bale (yarn)
Wood-sawing machine	$ 30	3,000 reels
Polishing machine	$100	3,000 reels
Wood-boring machine	$ 30	3,000 reels

All these machines, except the yarn reeling and waxing machines, are power-driven, but the work of yarn dividing is done entirely by hand. Most of the machines in these factories have been bought from factories that had closed down, as the industry has been suffering considerably from depression.

Workers other than those employed in pasting labels and packing, are paid at piece-rates. In waxing and dyeing male workers are employed, while women and child workers are engaged in yarn dividing and reeling and in thread reeling. Cotton reels are made by male operatives. The following table shows the wages earned by various classes of workers:—

	Rate	Average Daily Output
Waxing	30 cents per bale	2 bales
Thread reeling	3 cents per doz. (1 box)	40 boxes
Wood-sawyers, polishers, and borers	30 cents per 1,000 reels	3,000 reels

Workers employed in pasting trade-marks on reels and in packing are paid from $3 to $4 monthly, board and lodging being provided by the factory.

The usual working period is 10 hours per day, but during the busy season is extended to 12 or 13 hours.

The 42-count, 3 ply cotton yarn used is the product of Chinese mills, and in Shanghai about 540 bales, worth approximately Tls. 220,000, are annually consumed. All the wood for making cotton-reels was imported from Japan in former times, but recently suitable supplies have been produced in Wenchow (溫州), Chekiang. This wood is imported in small sticks, each being made into 10 cotton-reels. About 360,000 sticks, valued at approximately $10,800, are consumed in Shanghai annually.

In making sewing thread the yarn is first dyed and waxed, and then divided into small equal portions, each portion being reeled on a separate bobbin. It is then wound on a wooden reel, and after pasting on the trade-mark of the factory and being packed in cardboard boxes is ready for sale.

Only the Hua Chen factory makes its own cotton-reels, maplewood sticks being first sawn into small cylindrical pieces, which after polishing and boring are ready for reeling thread.

Of the six factories operating in Shanghai the Hua Chen, with an annual capacity of 27,360 gross, is the largest, and sold 7,200 gross worth $60,480 of sewing thread in 1930, made in two varieties, No. 40 and No. 50, though the price is the same for both. This cotton is made in three colors, white, blue, and grey, and is now used in all parts of the country, being particularly popular in Kiangsu and Chekiang. In Shanghai, the annual consumption amounts to about $270,000 in value.

GRASSCLOTH

Grasscloth weaving is a cottage industry in Kiangsu Province, and at Kunshan and Taitsang a considerable number of people are engaged in this work. In the 9th and 10th sections of Kunshan city there are nearly 5,000 families, with about 20,000 workers, engaged in making this material. Grasscloth is classified in three different ways:—

1. According to raw material.—Grasscloth made with coarse ramie fibre is called *ma pu* (麻布), while *hsia pu* (夏布) is made entirely of fine ramie. Cloth with ramie warp and cotton woof is called *chu chin mien wei* (苧經棉緯), and that made with ramie warp and silk woof is known as *chu chin ssu wei* (苧經絲緯).

2. According to width.—Grasscloth from 0.95 feet to 1.15 feet in width is called narrow cloth or *hsia pu* (狹布), while that from 1.95 feet to 2.20 feet wide is called broad cloth or *kuo pu* (闊布).

3. According to color.—Grasscloth is described as *chi pei* (機白), *tzu pei* (次白), *tsao pu* (糙布), *huang pu* (黃布), etc., according to color.

The material used for making grasscloth consists of ramie, cotton yarn, and raw silk. Ramie comes from Kiangsi and Hunan, costing about $28 per picul. Formerly the price was much cheaper, but large quantities of ramie have been exported abroad during recent years, causing prices to rise to their present level. Cotton yarn is produced in Taitsang, costing 7 or 8 cents per *liang*, and weaving families usually prepare their own raw silk, the cost of which is much cheaper than that sold in open market.

Ramie is the principal raw material for making grasscloth, and though now much more expensive than it was, the price of grasscloth has not increased proportionally. Weavers, in trying to keep down the cost of production, have produced fabric of inferior quality, causing prices to drop still lower.

The manufacture of grasscloth is entirely by hand. Ramie is first separated into fine fibres and then joined together, dyed, and made into warp threads, which are set on the loom. The grasscloth is then woven with a shuttle having the desired woof attached to it. When white cloth is wanted, bleaching is necessary, and either the ramie fibre or woven cloth is spread out on the banks of streams and exposed to strong sunlight becoming white in six or seven days.

The output of Kunshan grasscloth has decreased considerably in recent years, as shown by the following table:—

	Colored Cloth (feet)	Tsao pu (unbleached) (feet)
1912	7,200,000	8,400,000
1916	7,000,000	8,600,000
1917	7,300,000	8,900,000
1918	7,400,000	9,200,000
1919	7,300,000	19,200,000
1920	7,200,000	19,100,000
1921	7,100,000	18,400,000
1922	6,800,000	18,000,000
1923	6,900,000	9,100,000
1924	6,700,000	8,300,000
1925	6,600,000	6,900,000
1926	6,500,000	6,300,000
1927	6,200,000	2,000,000
1928	5,900,000	1,900,000
1929	5,500,000	200,000
1930	5,100,000	900,000
1931	1,800,000	850,000

Taitsang weavers produced over 100,000 *pi* (bolts) of grasscloth during 1930, but since then the annual output has greatly decreased.

A considerable quantity of Kunshan and Taitsang grasscloth is consumed locally and in neighboring districts. The districts of Wuchin, Wukiang, Kiangyin, Tsingkiang and Tungtai are the principal markets in Kiangsu Province, while the districts of Kashing (嘉興) and Huchow (湖州) in Chekiang, and the Fukien and Kwangtung coastal districts also absorb a considerable quantity. At one time grasscloth was exported to Korea in large quantities, but owing to the high tariff and Japanese competition this market has been lost.

From 1919 to 1921 Kunshan grasscloth sold at five cents a feet for the colored variety and three cents for unbleached cloth, but the current price is about four cents for the former and two cents for the latter.

Kunshan and Taitsang grasscloth is sold through *pu chuang* (布莊), who buy from the weaving families and sell to local and outside purchasers. Salesmen are also sent to Kashing, Huchow, Shanghai, and other places.

CHAPTER VII

HATS

THE MANUFACTURE of straw and felt hats in Kiangsu has within recent decade assumed increasing importance. There are at present more than 100 hat factories in this Province, of which 89 are in Shanghai and over a dozen in Nanking. Details of the principal firms in Shanghai are as follows:

	Capital	Product	Annual Output			
			Felt Hat. (doz.)	Straw Hat. (doz.)	Cap. (doz.)	Value of Annual Output
Wang Yung Chang (王永昌)	$ 1,000	Straw hat	——	800	——	$10,000
Yuan Chang I (元昌義)	2,000	„ „	——	4,500	——	5,000
Chou Chuan Chi (仇全記)	2,000	„ „	——	1,000	——	20,000
Ta Ming (大明)	₹20,000	„ „	——	——	——	₹40,000
Yung Mao Chang (永茂昌)	1,000	„ „	——	——	——	10,000
Ho Feng (合豐)	5,000	„ „	——	——	——	12,000
Lao Fu Tai (老福泰)	1,000	„ „	——	1,200	——	2,500
Chiu Chi (求已)	1,000	„ „	——	1,000	——	12,000
Yu Sheng (有聲)	1,000	„ „	——	800	——	5,000
Yu Jung Hsing (余榮興)	1,200	„ „	——	700	——	12,000
Hsin Chen Kang (忻振康)	1,000	„ „	——	1,000	——	10,000
Hsieh Kang (協康)	1,000	„ „	——	——	——	——
Kuan I (冠益)	5,000	Straw and felt hats	1,000	2,000	——	50,000

Chen I Chi (陳義記)	1,500	Straw hat	——	500	——	10,000
Hsu I Yuan (徐益源)	1,000	„ „	——	1,600	——	——
Hua Fu (華 福)	100,000	Straw and felt hats	7,000	8,000	——	300,000
Hua Tung (華 通)	2,000	Straw hat	——	400	——	4,000
Hua Kuo (華 國)	10,000	Straw and felt hats	2,000	3,000	——	100,000
Hua An Ho Chi (華安合記)	3,000	Straw hat	——	1,000	——	20,000
Hua Cheng (華 成)	1,000	Straw and felt hats	——	300	——	8,000
Hua Sheng (華 盛)	1,000	Straw hat	——	500	——	10,000
Hua Hsing (華 興)	12,000	Straw and felt hats	——	400	——	80,000
Tsao Cheng Chi (曹誠記)	3,000	Straw and felt hats	1,700	1,200	——	35,000
Hsu Wei Chi (許惟記)	10,000	Straw and felt hats	——	5,000	——	100,000
Kuo Hua (國 華)	3,000	Straw and felt hats	3,000	500	——	25,000
Cheng Yu Chi (程友記)	1,000	Straw hat	——	——	——	5,000
Fu Hsing Tai (復興泰)	1,000	„ „	——	1,400	——	3,500
Huang Shao Chi (黃紹記)	3,000	Straw and felt hats	500	500	——	$15,000
Hsin Chang (新 昌)	1,000	Straw hat	——	500	——	$14,000
Hsin Hsin (新 新)	2,000	„ „	——	300	——	10,000
I Hsing Hsiang (義興祥)	1,000	„ „	——	600	——	3,000
Wan Lung (萬 隆)	1,000	„ „	——	1,400	——	10,000
I Tseng Fu (義增福)	1,000	„ „	——	1,000	——	10,000
Wan Cheng (萬 成)	1,000	„ „	——	1,000	——	——
Fu Chi (福 記)	3,000	„ „	——	2,000	——	30,000

Fu Li (福 利)	10,000	Straw and felt hats	—	—	—	80,000
Fu Yuan (福 源)	2,000	Straw and felt hats	—	—	—	—
Tung Hua Sheng (通華昇)	3,000	Straw hat	—	1,000	—	30,000
Yeh Shun Chi (葉順記)	1,000	„ „	—	500	—	8,000
Chu Chang Hsiang (聚昌祥)	1,000	„ „	—	250	—	4,000
Te Hsing Ming Chi (德興明記)	3,000	„ „	—	1,500	—	36,000
Te Tai Ho (德泰和)	5,000	„ „	—	1,000	—	5,000
Chin Chang Chi (錦昌記)	1,000	„ „	—	1,400	—	10,000
Hung Yuan Tai (鴻源泰)	1,000	„ „	—	1,800	—	10,000
Chung Yuan Chi (鐘源記)	1,000	„ „	—	2,200	—	10,000
Yueh Jui Chi (樂瑞記)	1,000	„ „	—	800	—	4,000
Kuan Mei (冠 美)	50,000	Straw and felt hats	1,000	4,500	—	85,000
Kuan Chiu (環 球)	50,000	Straw and felt hats	10,000	1,200	—	250,000
Hua Hsiang (華 祥)	2,500	Straw and felt hats	—	—	—	—
Hua Cheng (華 成)	2,000	Straw and felt hats	—	—	—	10,000
Hsin Hua (新 華)	15,000	Straw and felt hats	1,500	1,000	—	55,000

RAW MATERIALS

Straw braids used in factories in Kiangsu are made of wheat stalks and come from northern provinces, especially Shantung and Hopei. Wheat stalks from the south are too brittle for hat-making. The table given below shows the distribution of straw-producing districts in the provinces of Shantung, Hopei and Honan:

Provinces	Districts	Where collected and distributed
Shantung	Laichow (萊州), Pingtu (平度), Haitsang (海倉), Paishashih (白沙市), Huang-hsien (黃縣).	Shahochen (沙河鎮)
	Taian (泰安), Hsintai (新泰),	Fouchiu (浮邱)
	Ningyang (寧陽), Chungchuang (中莊)	Ningyang
	Tawangshan (大王山).	
	Tanchang (鄲城).	Matou (馬頭)
	Changi (昌邑), Weihsien (濰縣), Hsin-cheng (新城), Kaomi (高密).	Weihsien
Hopei	Tsinghsien (青縣), Hsingtsi (興濟), Tsunghua (通化).	Yutien (玉田)
	Tsanghsien (滄縣), Hsienhsien (獻縣), Chingyun (慶雲), Nanlo (南樂).	
Honan	Checheng (柘城), Taikang (太康), Chu-chiao (朱堌), Kuiteh (歸德).	Luyi (鹿邑)

With regard to felt hats, they are chiefly made of wool, which comes from Australia or Szechuen and Chekiang, that from the former being more expensive, valued approximately at from Tl. 1 to Tls. 11.50 per pound. The domestic varieties are worth from 50 to 80 cents per pattern.

MARKETS

Hopei was formerly the principal market for hats made in Kiangsu. Business with that province, however, has decreased considerably in recent years, attributed mainly to the underselling of Japanese hat manufacturers. The other important sources of demand are Swatow, Macao, Foochow, Tientsin, Kaifeng, Loyang, Changsha, Hankow and many cities in Kiangsu and Chekiang. There were at a time fairly good demands from Szechuen, but with the gradual development of hat industry in that province these few years, the volume of purchases has greatly decreased.

In 1930, the total consumption of straw hats made in Kiangsu throughout the country amounted to approximately 80,000 dozen, but in the following year the figure fell to about 70,000 dozen. Busines was further depressed in 1932, only 30,000 dozen being disposed of. The Sino-Japanese military oprations in Shanghai, coupled with the keen competition by the imported hats offered a setback to the industry.

Straw hats are not a principal article of export of this country, the total value of shipments (including rush hats) to different foreign countries from 1928 to 1931 being as follows:

To	1928 Hk. Tls.	1929 Hk. Tls.	1930 Hk. Tls.	1931 Hk. Tls.
Hongkong	69,292	51,425	45,639	32,083
Macao	38,350	23,511	23,477	6,546
Annam	169	534	31	——
Siam	6,316	11,373	8,578	2,774
Straits Settlements	6,160	8,098	6,164	6,256
Java	1,755	1,770	2,428	1,768
India	12,620	10,630	4,780	5,317
Great Britain	9,548	24,139	26,778	32,040
Germany	650	2,345	7,171	107
Belgo-Luxemburg Federation ..	647	187	720	375
France	9,377	15,996	32,870	18,431
Switzerland	——	471	90	——
Italy	323	133	——	——
Korea	2,998	2,572	478	532
Japan & Formosa	53,936	25,696	25,915	35,398
Canada	——	7,058	150	1,563
Honolulu	35,514	108,542	134,487	80,520
Australia and New Zealand	564	9,006	——	——
South Africa	——	900	2,903	——
Total ...	248,269	304,386	322,659	235,999

In addition to straw and rush hats, China also exports a small number of caps. The following table shows the value in Haikuan Taels of Chinese caps of all kinds exported abroad during the years from 1928 to 1931:—

To	1928	1929	1930	1931
Hongkong	29,764	44,293	41,362	37,512
Annam	40	——	323	348
Siam	1,084	261	170	——
Straits Settlements	1,733	1,880	1,161	2,151
Java	2,943	1,256	1,895	1,772
India	307	470	112	303
Russia, Pacific Ports	223	——	——	29
Korea	79	——	43	1
Japan and Formosa	2,308	——	1,430	4,561
Philippine Islands	1,655	8,184	1,328	1,636
Canada	34	1	3	——
Honolulu	126	3	——	85
Total	40,316	56,348	47,827	48,414

CHAPTER VIII

BUTTONS

THE MANUFACTURE of shell buttons in Kiangsu began in 1917, when two factories, Tsu Chiu (自 求) and Chiu Chieh (求 介) commenced operations in Shanghai, and the industry developed considerably during the succeeding years, though for a short period after 1926 brass buttons were much in fashion, following the introduction of a new kind of Chinese dress, the so-called *chung shan* costume (中山裝).

Button factories of comparatively small size are found in many other cities in Kiangsu, such as Wuhsien, Chingkiang, Wuchin, and Sungkiang. In Wuhsien a Japanese concern is operating a factory under the name of Chiao Mu (喬 木), now the only large manufacturer in the interior. The first button factory in Chinkiang was established in 1920. More than a dozen competitive factories made their appearance later, but their operations were confined to making rough bodies of buttons, which were exported in that unfinished state to Japan, Germany and the United States, but the demand gradually decreased owing to inferior quality, and a number of concerns had to close after a very brief period of operation. The comparatively large firms in Sungkiang are the Jih Hsin (日 新) and the Lung Kuang (龍 光), the latter being newly organized.

The following table gives brief details of the principal firms now in operation in the Province:

	Location	Capital	No. of Operatives	No. of Machines	Annual Output Amount (lo)	Value
Tsu Chiu (自 求)	Shanghai	$6,000	29	9	14,400	$43,200
Ching Sin (金 星)	„	5,000	27	—	——	——
Chung Kuo (中 國)	„	3,000	32	20	13,920	6,500
Hsieh Lung (協 隆)	„	1,600	7	8	2,160	6,480

Tien Fu	(天 福)	Shanghai	10,000	10	4	3,000	5,700
Hui Chun	(惠 春)	„	2,500	11	8	3,600	1,800
Yung Jun	(永 潤)	Chinkiang	1,000	16	22	1,200	9,000
Jun Chou	(潤 州)	„	1,500	24	34	1,500	10,000
Feng Chi	(豐 記)	„	2,000	16	20	1,500	10,000
Jih Hsin	(日 新)	Sungkiang	3,000	60	41	4,500	13,500
Lung Kuang	(龍 光)	„	2,000	25	20	3,000	9,000

RAW MATERIALS

Shell buttons are mostly made from the shells of pearl oysters, brought to the factories from such coastal districts as Sungkiang, Pootung, Wukiang, and, quite recently, from Kiukiang, Kiangsi Province, either in natural form or in rough shape. Hunan, Hupeh and Anhui also supply part of the demand, and the total Kiangsu consumption of shell amounts to more than 84,000 piculs annually.

Bone buttons are generally made from cattle bones and hoofs, though those made of leather are also put into this category. An abundant supply of these materials is always obtainable locally, Shanghai alone producing more than 50,000 piculs.

Chung Shan buttons (中山鈕)—are cut out of tin-plate scrap from can factories.

In addition to the varieties mentioned, buttons are also made of brass, silver, celluloid, imitation shells, tortoise shell, etc. to suit Western-style dresses. The principal firms engaged in button manufacture are the Ching Sin, Tai Hsing (泰興) and Tai Kang (泰康), Shanghai. Real and imitation tortoise shell is almost entirely imported, while celluloid is largely bought from Germany, though the Great China Celluloid Goods Manufacturing Company (大中華賽璐珞製造廠), Shanghai, is supplying part of the local need.

Buttons made out of fruit-stones were formerly imported in considerable quantities from Japan. Of late, however, Chinese manufactures have begun to appear on the market, and are gradually displacing theJapanese products, the raw material being mainly purchased from the Solomon Islands.

PRODUCTION

There are no reliable statistics concerning the total annual production of different button factories in Kiangsu Province, but the Bureau of Foreign Trade gives the following estimate of the output:—

	Shell Buttons (lo)	Sleeve Buttons (lo)	Chung Shan Buttons (lo)	Fruit-stone Buttons (lo)	Other Buttons (lo)	Total Amount (lo)	Production Value
Shanghai	54,500	25,000	9,000	5,000	16,500	110,000	$583,100
Chinkiang	7,500	——	——	——	——	7,500	48,600
Wuchin	5,787	——	——	——	——	5,787	150,000
Wuhsien	600	——	——	——	——	600	60,000
Sungkiang	7,500	——	——	——	——	7,500	25,000

Lo (羅) is a peculiar name used in the trade, meaning a gross in the case of sleeve and *chung shan* buttons, and a package of a dozen cases of 144 buttons of shell buttons.

FOREIGN MARKETS

Prior to the development of the domestic industry, China imported a considerable quantity of foreign buttons, especially from Japan. It is only in very recent times that a tendency of decreasing imports from that country is shown, details being as follows:

From	1928 (Hk. Tls.)	1929 (Hk. Tls.)	1930 (Hk. Tls.)	1931 (Hk. Tls.)
Hongkong	30,665	39,996	42,410	73,976
Great Britain	3,415	7,679	7,634	11,230
Germany	271,547	382,571	239,254	579,732
Netherlands	3,590	17,624	22,751	45,183
Belgo-Luxemburg Economic Federation	14,856	41,353	5,059	20,408
Italy	41,289	35,215	14,560	14,674
Japan and Formosa	803,253	633,065	598,451	735,300
Net Total Imports ..	1,173,122	1,166,130	930,936	1,483,715

Chinese buttons are not exported in any quantity, though there are occasional demands from the Straits Settlements, Hongkong and India. The products of Shanghai factories go mainly to such domestic ports as Tientsin, Tsingtao, Chungking, Hankow, Changsha, Wuhu, Kiu-

kiang, Nanking, Hangchow, Ningpo, and Foochow. The rough discs made in Chinkiang are in keen demand in Shanghai, Wuchin, Wusih, Kiangtu, ect. while those manufactured in Sungkiang have Shanghai, Hangchow, Kashing, and Ningpo as their principal markets. Details of annual sales are as follows:

	1929 (lo)	1930 (lo)	1931 (lo)
Shanghai	82,000	95,000	109,000
Chinkiang	6,300	7,500	7,300
Wuchin	5,500	5,700	5,700
Wuhsien	500	600	600
Sungkiang	5,500	7,000	7,500

CHAPTER IX

RUBBER SHOES

MANUFACTURED rubber goods were first introduced into Canton by Chinese importers, and the advantages of rubber soles were soon realized by the Cantonese, resulting in a great demand therefor. Seeing the possibilities of the market in Canton, a number of overseas Chinese organized the Kwangtung Brothers Rubber Company (廣東兄弟樹膠公司) in 1917.

The first factory for manufacturing rubber tyres, toys, and soles in Kiangsu was established in Shanghai in 1920 under the title of the China Industrial Training Works. (江蘇模範工廠). After four years' operation, however, concern closed down owing to financial difficulties. The second establishment of the kind in the Province, the I Chang Rubber Factory (義昌橡膠廠) did not come into existence until 1927, This concern was organized by a group of returned students from Japan and the rubber overshoes produced meet with a very good demand. On account of mistakes in purchasing policy, however, the company suffered a tremendous loss from the slump in the price of rubber, of which large stocks were held, and was forced to sell out to a new concern called the Chen Tai Rubber Factory (正泰橡膠廠)

The establishment of the Ta Chung Hua Rubber Factory (大中華橡膠廠) in 1928 marked a new era in the industry. This concern, capitalized at $1,100,000 and employing more than 2,000 operatives, is the largest of its kind in the whole country, but there are many other establishments , as shown in the following table:

Organization.		Capita.	Principal Product.	Output. 1930	1930
Ta Hua (大華)	Partnership	₮ 40,000	Shoes & overshoes	$ 50,000	$ 100,000
Yi Shen (義生)	„	$ 12,000	Overshoes & walking shoes	700,000	1,400,000
Yi Ho (義和)	Joint Stock Co. ..	120,000	Overshoes	50,000	100,000
Yung Woo (永和)	Unlimited Corporation	₮ 60,000	Overshoes & balls	50,000	100,000
Ta Shen (大生)	Partnership	$ 20,000	Shoes & overshoes	50,000	100,000
Kwangtung Brothers ..... (廣東兄弟)	„	200,000	Shoes & overshoes	500,000	600,000
Ta Hsin (大新)	Corporation	50,000	Overshoes & rollers	50,000	100,000
Ta Yung (大用)	„	500,000	Shoes, overshoes, gymnasium shoes & hot-water bags	——	100,000
Tai Ping Yang (太平洋)	——	20,000	Overshoes	——	100,000
Italy (意大利)	Partnership	15,000	Overshoes, hot-water bags, toys & miscellaneous rubber goods	50,000	90,000
Chiao Tung (交通)	„	80,000	Overshoes	——	——
Great Shanghai (大上海)	——	65,000	Overshoes	——	100,000

China Industrial & Commercial Factory (中國工商橡皮廠)	——	150,000	Shoes, overshoes & hot-water bags	300,000	500,000
Yung Ta (永大)	——	100,000	Overshoes	——	20,000
Ta Chung Hua (大中華)	Joint Stock Co.	1,100,000	Shoes, overshoes, hot-water bags and rubber goods for mechanical purposes	1,400,000	2,800,000
Ta Chung Kuo (大中國)	Partnership	$ 30,000	Shoes, hot-water bags, tubing, toys and rain-coat material	300,000	500,000
Chen Tai (正泰)	Corporation	$120,000	Shoes & overshoes	900,000	1,500,000
Hua Tung (華通)	Partnership	20,000	Shoes & overshoes	60,000	100,000
Nan Hua (南華)	Corporation	60,000	Overshoes	——	100,000
Kiangnan Yu Chi (江南裕記)	Partnership	20,000	Overshoes & gymnasium shoes	60,000	100,000
Yi Yuan (義源)	Unlimited corporation	20,000	Overshoes, gymnasium shoes, walking & tennis shoes	50,000	100,000
Chen Hua Hing (振華興)	——	5,000	Overshoes	40,000	90,000
Ming Shen (民生)	Corporation	$ 30,000	Overshoes	60,000	100,000

Ming Hua Hsieh Chi (明華協記)	Partnership	$ 20,000	Shoes	—	100,000
Ta Fu (大孚)	Corporation	50,000	Shoes, overshoes & walking shoes	—	5,000
Ta Teh (大德)	Partnership	₸ 20,000	Overshoes	—	100,000
Ta An (大安)	—	$ 50,000	Overshoes	—	20,000
Hua Shun (華順)	—	20,000	Overshoes	80,000	100,000
Ta Lai (大來)	Unlimited Corporation	₸ 50,000	Shoes, overshoes & walking shoes	—	20,000
Hung Ta (宏大)	Sole Proprietorship	10,000	Overshoes	—	—
Hsieh Kang (協康)	Corporation	100,000	Tyres, overshoes & liquid rubber	—	—
Ta Chung (大中)	—	$120,000	Shoes, overshoes, hot-water bags & medical supplies	—	100,000
Ta Tung (大同)	—	100,000	Overshoes	—	50,000
Shih Yeh (實業)	—	20,000	Overshoes	—	—
Chi Ming (啓明)	Corporation	20,000	Overshoes	—	—
Yih Chung (益中)	Sole Proprietorship	16,000	Overshoes	—	—
Kung Ta (公大)	Corporation	15,000	Overshoes	—	—
Jui Lung (瑞隆)	"	20,000	Overshoes	—	—

No rubber tree is grown in China, and "smoked sheet" from Singapore is used in practically every Shanghai factory, most purchases being made through the Netherlands Gutta Percha Co. and Holland-China Trading Co. In 1919 and 1920 imported rubber fetched about 80 tael cents per pound, but prices dropped in 1928 to about 50 cents and to about 10 cents in 1931, the low level of eight cents being touched during the Shanghai "war" at the beginning of 1932, the price now prevailing being about 14 cents.

With regard to other used in the rubber industry, purchases were fomerly made through Japanese trading companies, but since the occupation of Manchuria in 1931 Chinese manufacturers of chemical products have started making calcium carbonate, magnesium carbonate, zinc oxide, lithophone, sulphuric carbonate, etc. Stocking cloth and other textiles used in making rubber overshoes are entirely of Chinese manufacture, the desire being to patronize China's cotton spinning and weaving industry as well as to purchase in the cheapest market.

At present, the rubber industry in Shanghai is practically confined to the production of overshoes and canvas rubber-soled shoes, only a few factories manufacturing pneumatic rickshaw and biycle tires, toys, and hot-water bags.

The fact that practically every factory produces the same type of shoes gives rise to cut-throat competition among manufacturers. These goods are being sold at exceedingly low prices, with Yangtse ports serving as the principal markets, followed by the Northern provinces, the Straits Setlements, and Southern provinces in the order given. Japanese goloshes have been almost entirely driven out of the Chinese market, but the consumption of American gymnasium shoes and tyres has been increasing during recent years, as shown by the following import figures from 1929 to 1931:—

	1929. (Hk. Tls.)	1930. (Hk. Tls.)	1931. (Hk. Tls.)
Rubber and gutta percha ...	734,578	381,978	1,206,643
Rubber and gutta-percha tyres	3,423,279	3,032,643	4,584,352
Rubber and gutta-percha boots and shoes and other manufactures	5,411,331	5,685,741	5,130,526

CHAPTER X

UMBRELLAS

IN BYGONE days there was no such distinction as a parasol or an umbrella in China, both being made of bamboo ribs on which paper is pasted and oiled over, because the former was little used in old days as rich people went out in carriages or cedan chairs when the day was hot, while the poor used to wear large straw hats for sunshades.

The umbrella manufacturing industry in Kiangsu is concentrated in Wuchin, though not a few makers are also found in Chinkiang, Tanyang, Ihsing, Liyang, Wusih, Changshu, Kiangyin, Taihsing, etc. At the very beginning, however, none of these cities manufactures umbrellas, the industry being originated in Hunan and Hupeh. It was not until the latter half of the 19th century that men returning from Central China pioneered the enterprise at Wuchin, which city, possessing particular facilities of obtaining raw materials, is specially adapted to the development of the industry.

The period prior to the fall of the Monarchy marked the highest peak of prosperity of umbrella-making in Wuchin due to cheap labor and raw materials. Nevertheless, not long after the establishment of the Republic, markets were gradually lost as a result of the introduction of imported articles, which, being made of silk or cloth supported by metal ribs, are much more beautiful, lighter in weight and smaller in size. Parasols and umbrellas from Germany and Japan appeared on Chinese markets very long ago, almost as soon as the first seaports had been opened to foreign trade, but they were not popularly used until 1914 when the total annual import amounted to about Hk. Hls. 1,501,700 in value.

The first Chinese factory manufacturing western-style umbrellas and parasols, was the Min Sheng Factory (民生洋傘廠), established in 1912 in Shanghai. Though the concern was forced to wind up after a brief period of operations, its operatives were able to institute a number of new factories. Frames used were at first entirely Japanese made, but the "use home product" movements after 1925 encouraged home manufacture, and three firms—Wu Feng (五豐), Hsin Ta Lu (新大陸) and Tung I (統一)—started one after another to make hand rods, metal ribs and struts. Affected by the slump in silver prices in 1930, however, the industry received a serious setback and consequently, Hsin Ta Lu and Tung I were forced to suspend operations while the Wu Feng was reorganized. With the revival of the Japanese boycott movement in 1931, Wu Feng was bought back and operated under the name of Hua Li Shih (華利時) whereas the equipments of the Hsin Ta Lu went to the Shan Hsing Factory (三星廠), the Tung I being handed over to a new administration and given the name Kung Chi (公記). In the meantime, a new factory, the Jen Ho (人和), was established. At present, domestic products are able to displace almost entirely imported articles.

PRESENT CONDITIONS

There are now about 84 umbrella manufacturers in Wuchin and 41 in Shanghai, with two to about a dozen in each of the cities like Chinkiang, Tanyang, Ihsing, Liyang, Wusih, Changshu, Kiangyin and Taihsing, the total number in the Province amounting to no less than 200. Most of the factories make paper umbrellas and possess very small capital, ranging from 100 to 10,000 dollars—the largest concern in Wuchin being operated with $5,000. Only those making cloth umbrellas have separate rooms for sales departments and workshops, the remainder confining their entire work to a single room.

Old style paper umbrellas are made by hand. Sewing machines produced by the Singer Sewing Machine Co. are extensively used in factories manufacturing cloth umbrellas. Workers employed in the cloth cutting and sewing departments of cloth umbrella factories in Shanghai

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Old style paper umbrellas are made by hand. Sewing machines produced by the Singer Sewing Machine Co. are extensively used in factories manufacturing cloth umbrellas. Workers employed in the cloth cutting and sewing departments of cloth umbrella factories in Shanghai

are all paid on a piece rate basis. In average, cloth-cutters receive from 0.4 to 0.5 cent per umbrella, while sewers, from 1.80 to 2 cents. Those who work in the assembling department are provided free board and lodging and receive a monthly wage of from $4 to $14.

RAW MATERIALS

The paper umbrella may be called a national product in the true sense of the word. All the important raw materials such as paper, oil or paint, lacquer, and bamboo are produced at home with possibly one or two exceptions like German aniline dye and Japanese cotton cord. The raw materials used in manufacturing cloth umbrellas are wooden mainstays, wooden handles, camlets, twille cotton cloths, steel cords, ribs, rubber rings, ribbons, and top-pieces. The best for mainstays come from Taichow (台州), Chekiang Province. The camlet and the twilled cotton cloths are bought from Great Britain and Japan, the latter being also supplied by home weavers like the Ta Feng (達豐) and the Kuang Hua (光華). The German ribs are best. Other articles are either home made or imported from Japan. According to a recent estimate, the total value of raw materials consumed by Shanghai factories amounted to approximately Tls. 500,000 a year.

PRODUCTION

There are nearly half a dozen kinds of umbrellas and parasols turned out by makers in Kiangsu Province. In addition to the ordinary paper umbrellas and cloth or silk parasols, there are the "patriotic" umbrella (愛國傘), which is really a parasol and umbrella combined; the "sleeve" umbrella, (袖傘), which is especially made for monks, so called because of its being very handy and capable of being hidden in the big sleeves of the monk's robe; the "traveller's" umbrella (旅行傘); the painted kittysol, which has figures printed on the paper web; the "children's variegated" umbrella (兒童五彩傘); and the canopy, which is mainly used by peddlers for sunshades.

The total number of umbrellas and parasols produced in the Province in 1931 amounted to approximately 350,000, valued at $306,500. The demand for umbrellas of the old-

type has rapidly decreased in recent years, as most people now-a-days prefer to wear straw hats and raincoats. Perhaps, the only variety which is gaining popularity in domestic markets is the paper kittysol, which, being fancifully made, is much to the taste of Chinese ladies, who seldom wear hats. The following table shows details of umbrella production in Kiangsu in 1931:

	Aveage Price per piece	Number Produced	Total Value
Paper umbrellas	$0.20	80,000	$ 15,000
"Patriotic" umbrellas	0.30	50,000	15,000
Paper parasols	0.25	25,000	6,250
Camlet and twilled cotton cloth umbrellas	1.35	99,000	133,650
Paper kittysols	0.40	18,000	7,200
Silk kittysols	1.90	66,000	125,400
Other varieties	0.30	10,000	3,000
Total		348,000	306,500

MARKETS

As umbrellas are made in all such provinces as Hunan, Hupeh, Anhui, Chekiang, etc., those manufactured in Kiangsu do not have extensive markets outside the Province. Silk umbrellas and kittysols made in Shanghai are, however, popularly used throughout the country. With regard to ladies' paper kittysols, they are demanded only in principal ports like Shanghai, Hankow, Canton, etc. From the Straits Settlements, there are but small demands for these articles.

Umbrellas and parasols are always obtainable from the makers' sales departments or local groceries. The shipments for the Straits Settlements are packed in large wooden boxes. To prevent sticking while closed packed, each kittysol or umbrella is covered with a paper wrapper on which the brand or trade-mark of the maker is printed. The products from Wuchin are usually sent to Shantung and Peiping for sale by private sailing boats, though postal service is also available. The slow water transportation is preferred on account of high postage charged.

CHAPTER XI

SPECTACLES

CHINESE people did not wear spectacles until about 300 years ago. Old scholars of the Min Dynasty and upwards used a sort of single eye-glass known as *tan chao* (單 照) to assist defective sight.

Manufacturers of optical supplies in Kiangsu are concentrated in Shanghai and Wuhsien, there being six in the former and 26 in the latter. In Wuhsien, there are in addition about 30 small factories which do the assembling work and 20 crystal workshops.

The industry has declined since the introduction into this country of the fancifully made Western-style spectacles. At present, the value of annual output by Shanghai manufacturers totalled only approximately $200,000, while in Wuhsien, annual sales of Chinese spectacles never exceed $200,000.

Chinese spectacles may be classified into two main classes; those made of crystal lens and those of optical glass, the former being in turn of two kinds, ordinary quartz crystal and cairngorm stone. While quartz crystal is obtainable at Haichow, cairngorm stone must be brought from Mongolia. With regard to optical glass, it comes almost entirely from Germany, the total annual import amounting to approximately $300,000 in value. American glass is used only in small quantity.

Frames are made of gold, silver, copper, or celluloid, all plentifully supplied at home. Superior varieties, which are chiefly of tortoise shell, come mostly from Germany.

Optical supplies from Shanghai and Wuhsien are demanded throughout the country and sold together with clocks and watches. Below is a table showing the capital, the date of establishment, and the total annual output of

the six optical supply manufacturers in Shanghai, those in Wuhsien being of insignificant size and consequently not included:

	Capital	Date of Establishment	Annual Output
Chinese Optical Co.	$20,000	1912	$25,000
Chung Mei Watch and Optical Co.	20,000	1925	50,000
Oriental Optical Co.	10,000	1929	40,000
Hsing Hua Optical Co.	10,000	1917	30,000
Central Optical Co.	6,000	1929	20,000
Ta Ming Optical Co.	30,000	1917	130,000

CHAPTER XII

LEATHER TANNING

THE FIRST tannery of modern type to be opened in Kiangsu Province was the Shanghai Tannery, established in 1904 by a group of local British merchants. Other leather factories of fairly large size, the Yi Yuan (怡源), Lung Hua (龍華), Chi Hsin (啓新) and Kung Hua (鞏華), made their appearance in quick succession, but owing to mismanagement were soon forced to close down.

Shanghai is the centre of the leather industry, though there are many tanners in Nanking, Chinkiang and Tungshan. Most of these concerns are partnerships and sole proprietorships, with capital ranging from several hundred to 250,000 dollars. Details of the principal firms are as follows:

	Location.	Capital.	No. of Workers.	Product.	Annual Output
Tsing I (精 益)	Shanghai	$250,000	35	Sole leather	1,084,800 pounds
Ta Hua Chang Chi (大華昌記)	„	200,000	80	„ „	440,000 „
Yuen Ta (源 大).....	„	50,000	50	Upper and lining leather ..	38,000 pieces
Hsieh Yuen Chang (協源昌)..	„	20,000	15	Sole leather	144,000 pounds
Lao Yung Sen (老永森)	„	₹ 11,000	18	„ „	72,000 „
Hsiang Sien (祥 先)	„	$ 10,000	27	„ „	14,400 „
Yuen Hsing (元 興)	„	7,000	12	„ „	3,600 pieces
Hsin Chi (新 記)	„	4,000	19	"White" leather	3,600 „
Hsu Yung Chi (許湧記)	„	1,600	9	„ „	1,500 „
Tai Ping Yang (太平洋)	„	1,500	6	„ „	3,120 „
Chueh Yi Hsing (閩義興) ...	„	1,000	4	Trunk and lining leather..	7,000 „
Hsu Liang Chi (許亮記)	Nanking	1,500	7	Trunk and sole leather ...	—
Chiang Wan Shun (蔣萬順)..	„	1,500	5	Sole and trunk leather and leather for military use	—
Tu Yung Chi (杜榮記)	„	1,500	1	„ „ „	—
Wu Ching Lung (吳慶隆)	„	1,500	4	„ „ „	—
Chung Yuen (中 原)	Tungshan	2,000	11	Sole leather	700 „
Hsin Hsin (新 新)	„	1,200	9	„ „	500 „
Hsin Hua (新 華)	„	1,000	3	„ „	400 „

SOURCES OF RAW MATERIALS

The raw materials used in leather manufacture include hides and chemicals, being known in Chinese respectively as "primary" and "secondary" raw materials. The former consist principally of cow, horse, and ass hides, and the skins of sheep, camels, deer, lizards, etc. In the northwestern parts of China large numbers of asses, sheep, horses, and camels are domesticated, while in the provinces along the Yangtse and Yellow rivers cattle are raised in great number. The tanning materials used, comprising alum, salt, bark, gallnuts, etc. are either supplied by home markets or imported.

Cow and Buffalo Hides—Both varieties are good for making leather, but the former are preferred owing to greater durability and larger supply. Cowhides of the best grade are obtained from Honan, Shantung, and Szechuen, while inferior varieties come from Kiangsu, Chekiang, Hunan, Kwangtung, etc. Buffalo hides, being much coarser and harder, are used only in making leather articles of cheaper qualities, and are mostly produced in provinces along the Yangtse and Pearl rivers. The supply of buffalo hides is only about one-fifth that of cowhides, and prices are also very much cheaper.

Hankow, Tientsin, Tsingtao, and Shanghai are the four great markets for cattle hides. In the last-named city hides are generally classified in three groups—"dried," "salted," and "blood." Szechuen supplies the best "dried" hides, while Tungshan and Huaian, Kiangsu Provinces Pochow and Suchow, Anhui Province, and Kueiteh and Chungchow, Honan Province are famous for the second variety, "blood" hides being mainly a local product of Shanghai and vicinity. Prices prevailing in Shanghai are as follows:

	Per Picul.
Dried:	
Cow Hides	₮30-35
Buffalo Hides	25-26
Salted:	
Dried Cow Hides	28-36
Moist Cow Hides	17-18
Blood	$ 0.22 (per pound)

Sheep and Goat Skins.—Goat skins are either white or black, the superior quality having long, rich hair, chiefly used to make clothing and blankets. It is only skins of inferior quality which are made into leather.

Goats are raised in large numbers in the north-eastern and north-western provinces as well as in Szechuen, while abundant supplies of sheep-skins come from Hangchow, Kashing and Huchow, Chekiang. Both varieties are selling in Shanghai at about $2 each.

Horse Hides.—These are worth $6 or $7 a piece, the principal regions producing these hides being Szechuen, Yunnan, Shensi, Kansu, Shansi, Hopei, Shantung, Mongolia, and Liaoning. Those from Tatsienlu are known as Szechuen hides, while those from Kalgan and Shahukow are termed Kalgan hides, both being of excellent quality. Since most horse hides come from the Northern provinces, Tientsin and Dairen form the two chief collecting and distributing centers.

Ass and Mule Hides.—These skins are not much in demand by Chinese tanneries, the former being mostly used for medical purposes. Many Chinese provinces, especially Shensi, Kangsu, Hopei, Sinkiang, Shansi, Honan, Shantung, Hupeh, and Szechuen, produce ass and mule hides in enormous quantity, prices ranging between $4 and $5 per piece.

The chemicals used in tanning are of many kinds, and their use varies with the methods of manufacture. The following are some of the most important of these materials, together with sources of supply and present market prices in Shanghai:

Lime—Kiangsu and Chekiang, $2 a picul.

Salt—All provinces, $8 a picul.

Alum—Wenchow and Pingyang, Chekiang and northern Fukien, $2.40 a picul.

Gallnuts—Szechuen, Shensi, Kweichow, and Hupeh, above $10 a picul.

Potassium Bichromate—Germany, $700 a ton.

Chrome Alum—Germany, $350 a ton.

Sulphuric Acid—Japan, Tientsin and Shanghai, $15 per box.

Bark—South Africa, South America, Straits Settlements, and Australia.
Linseed Oil—Yangtze Valley.
Dyes—Great Britain and Germany.

MARKETING

About 70 per cent. of the leather tanned in Shanghai is consumed locally, the remainder going to outside markets. It is seldom tanners ship their products direct to consumers, most of the trade going through leather dealers who are classified in three groups, native, Canton, and Ningpo concerns. Those in the native group also deal in rattan goods, fans and grass goods, while the other two groups, being also dealers in imported leather, do a considerable volume of business. The tanneries in Nanking, Chinkiang and Tungshan supply only local markets.

IMPORTATION OF LEATHER AND LEATHER GOODS

The consumption of imported leather and leather goods in Shanghai has been decreasing in recent years, as shown in the following table:

	1929 (Hk. Tls.)	1930 (Hk. Tls.)	1931 (Hk. Tls.)
Belting	1,288,949	1,145,582	1,394,338
Sole Leather	4,290,077	2,541,744	2,283,822
Leather, Calf, Kid, and Cow	1,853,117	1,515,200	2,182,278
Boots and Shoes	278,091	263,495	150,063
Tanned Leather	199,817	221,281	201,555
Imitation Leather	514,067	522,561	961,711
Unclassified	833,040	866,246	993,127
Total	9,257,158	7,076,109	8,166,954

FOREIGN TANNERIES

Prior to 1932 foreign—and especially Japanese—competition in the leather industry was very acutely felt in Shanghai, where foreign tanneries with large capital and immense output were established, the most important being the China Tannery, Kiangnan Tannery Co., Miyasaki Tannery, Ta Li Tannery, and Shanghai Leather Co. The first three were Japanese owned, and closed down at the

beginning of 1932 in consequence of the Sino-Japanese hostilities. The Ta Li Tannery, an Italian concern, frequently suspends operations, and the Shanghai Leather Co.—also an Italian enterprise—is at present the only fully active large foreign tannery in Shanghai, producing an enormous quantity of sole and upper leather

BY-PRODUCTS

Raw hides, when brought to the tanneries, are always in a fresh state. The hair, fresh, and fat attached are all saleable, providing additional income for the tanners. From one cow hide about five or six catties of hair, 15 catties of fresh, seven or eight catties of hooves, and two or three catties of fat are usually obtained. On a sheep skin the wool attached amounts to about one catty, with three or four catties of fresh and fat. This offal is usually sold to dealers from Wuhsien and Wusih, whereas hair and wool go respectively to hat-makers and worsted factories. The average value of these by-products is approximately two per cent of that of the raw hides. Details are as follows:—

	Per Picul
Black Cowhair	$2.50
Yellow Cowhair	4.00
Wool	25.00
Flesh	2.00
Hooves	7.00
Fat	15.00

LEATHER MANUFACTURES

Leather made in Chinese tanneries is not exported, but finds a ready sale among local leather-goods manufacturers, mainly of two classes, one making boots and shoes, and the other making purses, bags, belts, harness, saddles, etc. This branch of the leather industry is also concentrated in Shanghai, but very few manufacturers have capital enough to equip their plants fully with modern machinery. Wuhsien and Wuchin assumed some importance in this trade several years ago, but business has been declining in recent years owing to development of the industry in larger neighboring cities.

CHAPTER XIII
TOILET ARTICLES

THE MANUFACTURE of toilet articles in this country is a new venture, as the use of soap, modern cosmetics and toothbrush was not popular among the masses before China came into commercial relations with foreign countries. After 1900, owing to the increased demand for modern toilet articles, Chinese industrialists began to establish factories manufacturing perfumes, hair tonics, soaps, toothbrushes, toothpowder and other toilet requisites of various descriptions. Kiangsu, which is the most industrialized province in this country, is the principal manufacturing center, and the following is a brief description of each of the principal lines of the industry:—

SOAP

Before China came into contact with Western industrial methods, soap was made from the pods of *Gleditschia japonica*. As the manufacturing methods employed were by no means scientific, they did not give very satisfactory results, and since the introduction imported soap into China, products made in the old native way have been giving way to the newer and better articles competing with them. At the beginning of this century, the Nanyang Soap and Candle Factory (南陽燭皂廠), the first of its kind in China, was established in Shanghai, and after a long period of prosperity the owners established a subsidiary factory in Chapei, Shanghai, in 1921. Many other soap factories were also established, but most of them were of limited capital and consequently small in scale. The Kupen Soap Factory (固本皂廠), originally a German concern, was sold to the International Dispensary, and With its complete modern equipment now ranks first among Chinese enterprises of this character. Several soap and candle factories established by foreigners, with their large capital and up-to-date equipment, are keen competitors of the Chinese enterprises, which during the Sino-Japanese conflict in Shanghai in 1932, being mostly situated in Chapei, suffered considerable losses.

There are altogetoer 58 soap factories in Kiangsu Province, several being also the manufacturers of candles. Their capital ranges from $1,000 to $500,000, and the workers employed number 814, with wages ranging from $1 to 45 cents a day. Most of the Chinese factories are not equipped with power-driven machinery, but the Kupen Soap Factory has steam and electric power of 70 h.p., the China Chemical Works (中國化學工業社) has an engine of 15 h.p., Hua Feng (華豐), 10 h.p., and the Ai Hua (愛華), one of 20 h.p.

The following table shows the type of organization, amount of capital number of workers, and location of the Chinese soap and candle factories in this Province:—

	Organization	Capital	No. of Workers	Location
Kupen Soap Factory (固本皂廠)	Corporation	$300,000	250	Shanghai
Ting Feng Soap Factory (鼎豐肥皂廠)	Partnership	30,000	15	"
Nanyang Soap & Candle Factory (南陽皂燭廠) ..	Corporation	80,000	20	"
Yi Mou Soap Factory (怡茂皂廠)	Individual	5,000	16	"
Sin Chang Soap Factory (信昌皂廠)	Partnership	10,000	23	"
Sin Hua Soap Factory (信華皂廠)	"	4,000	6	"
Li Da Factory (立大工廠)	Individual	10,000	56	"
Yu Mou Soap Factory (裕茂皂廠)	"	3,000	19	"
The Central Soap Factory (中央皂廠)	Partnership	40,000	25	"
Hang Lee Toilet Soap Factory (享利燭皂碱廠)	Individual	10,000	20	"
Ai Hua Sui Chi Toilet Soap Factory (愛華端記香皂廠)	Corporation	60,000	20	"
Hua Chang Soap Factory (華昌皂廠)	Individual	5,000	9	"

Kuang Hua Chemical Industry Society (光華化學工藝社)	Individual	12,000	9	Shanghai
Fu Chang Soap Factory (福昌皂廠)	,,	1,000	3	,,
Hua Feng Soap Factory (華豐皂廠)	,,	$30,000	65	,,
Yung Woo Industrial Co. (永和實業公司)	Corporation	$ 6,700	14	,,
Chenshin Toilet Soap Factory (振興肥皂廠)	Partnership	1,000	2	,,
Ta Hua Soap Factory (大華皂廠)	Individual	1,000	3	,,
Kung Mou Soap Factory (公茂皂廠)	,,	1,500	3	,,
Ta Teh Soap Factory (大德肥皂廠)	,,	9,000	5	,,
Chen Chi Soap Factory (震記肥皂廠)	,,	1,000	8	,,
China Chemical Society (中國化學工藝社)	Corporation	400,000	40	,,
Hsiang Min Soap Factory (祥民皂廠)	Partnership	5,000	7	,,
Fu Li Soap Factory (福利皂廠)	,,	4,000	7	Wusih
Ta Chung Hua Soap Factory (大中華皂廠)	,,	2,000	8	,,
Ting Chang Soap Factory (鼎昌皂廠)	,,	2,000	6	,,
Shun Chang Soap Factory (順昌皂廠)	Individual	1,000	6	,,
Kuang Hua Soap Factory (光華皂廠)	Partnership	3,000	2	Wuchin
Li Hsin Soap Factory (利興皂廠)	Individual	5,000	7	,,
Ni Ching Soap Factory (聚勤皂廠)	,,	3,000	3	,,
Chen Hua Soap Factory (振華皂燭廠)	,,	3,000	8	Chingkiang
Shin Mou Soap & Candle (仁茂皂燭廠)	,,	3,000	5	,,
Siang Tai Soap & Candle Factory (祥泰燭皂廠)	,,	3,000	10	,,
Yuan Ho Soap & Candle Factory (元和燭皂廠)	,,	2,000	5	,,
Yung Mou Candle & Soap Factory (永茂燭皂廠)	,,	1,000	4	,,

Ta Chung Soap Factory (大中皂廠)	Individual	2,000	7	Chingkiang
Chung Hua Soap & Factory (中華皂廠)	Partnership	3,600	10	Tanyang
Mou Kang Soap Factory (茂康皂廠)	"	3,000	5	"
Hui Kung Soap Factory (惠工皂廠)	"	3,000	4	"
Yu Kang Soap Factory (幼康皂廠)	"	1,000	6	"
Chen Hua Soap Factory (振華皂廠)	Individual	1,000	6	Kiangyin
Shin Hua Soap Factory (興華皂廠)	"	1,000	4	"
Ho Mou Hsin Soap Factory (和茂新皂廠)	Partnership	1,000	6	"
Tung Mou Soap Factory (同茂皂廠)	Individual	5,000	16	"
Nan Hsieh Hsing Soap Factory (南協興皂廠)	"	2,000	2	Shanghai
Hua Li Candle Factory (華利燭廠)	"	5,000	6	"
Heng Hsin Yu Candle Factory (恒興裕燭廠)	"	2,000	2	"
Chien Tai Sin Candle Factory (撰泰新燭廠)	——	——	—	——
Yu Ching Feng Candle Factory (裕慶豐洋燭廠)	——	——	—	——
Tung Tai Sin Candle Factory (同泰新燭廠)	——	——	—	——
Chen Chang Candle Factory (勷昌燭廠)	——	——	—	——
Yen Li Yuan Candle Factory (盛利元燭廠)	Individual	2,000	4	Tungshan
Wan Li Hsiang Soap Factory (萬利元燭廠)	"	1,000	6	"
Chung Hsin Soap Factory (中興皂廠)	"	1,000	8	"
Chung Kuo Soap Factory (中國皂廠)	"	500	3	"
Chung Hua Soap Factory (中華皂廠)	"	500	3	"
Tung Yao Soap & Candle Factory (通燿燭皂廠) ..	Partnership	3,000	8	Nantung
Sin Hua Soap & Candle Factory (新華燭皂廠)	"	6,000	6	"

RAW MATERIALS

The principal raw materials for making candles consist of paraffin wax and cotton yarn, while soda and oil or fat are chiefly used in making soap. Paraffin wax is a by-product obtained in refining petroleum and is not produced in China. The principal suppliers to the Chinese market are the Standard Oil Company and Asiatic Petroleum Company, the average price being about $22 per picul. The cotton wicks used are mostly products of the Sean You Zoo (三友實業社) and San Hsin (三星) factories, Shanghai, the price being about $1 for 1,000 feet. Both animal fats and vegetable oils can be used in soap manufacturing, the varieties commonly used being whale oil, mutton tallow, beef tallow, vegetable tallow, cottonseed oil, and coconut oil, while caustic potash or soda is another important ingredient, though sodium silicate is sometimes used.

Mutton tallow is largely produced in Hopei, Shansi, Chahar, Jehol, Suiyuan, and Chekiang, the market price being about $20 per picul. Though some beef tallow is produced in Kiangsu province, the chief producing districts are Shantung, Szechuen and Honan, where the ordinary price is about $19 per picul. Vegetable tallow is produced in Chinshih (津市) of Hunan, Hsuchow (敍州) of Szechuen, Shangchen (商城) of Honan, Tunghsiang (桐鄉) of Chekiang, Shihsien (敍縣) of Anhui, and Ichang (宜昌), Siashih (沙市), Itu (宜都), Chingmen (荆門), Huangchow (黃州), Machen (麻城), Huangkang (黃岡) and Chiechow (蒂州) of Hupeh, the price in Shanghai being Tls. 21 per picul. Cotton seed oil is to be had in all cotton-producing provinces in China, and the price in Shanghai is approximately Tls. 16 per picul. Coconut oil is only used in high grade soaps, as it costs nearly Tls. 30 per picul; the Philippine Islands and Straits Settlements are the principal suppliers.

Recently the Pacific Alkali Company (永利公司), Tanku (塘沽), and the Tien Yuan Electro-Chemical Works (天原電化廠) Shanghai, have produced caustic soda at Tls. 12 per picul, while the Pohai Chemical Society, (渤海化學工業社) Hopei, manufactures sodium silicate, the price being Tls. 4.60 per picul. Caustic potash is imported

from abroad. Perfumes used in soap-making are mainly imported from France, and other chemicals from Great Britain and Germany. Alcohol coes from the Straits Settlements, while resin and salt are produced in this country.

MANUFACTURING PROCESSES

The manufacture of candles is very simple. Paraffin wax is melted to a suitable degree and poured into iron molds in which cotton wicks have been fixed, and when the wax hardens again, the candles are formed. The molds used are of two types, the larger being capable of turning out 80 candles at a time, and the small 40.

In making laundry soap the fat or oil is first boiled and then put into a cylindrical vessel for saponification, caustic soda or potash being added. This mixture, when brought in contact with water, soon turns into a milky substance, becoming saponified after being kept for four hours at a temperature of 100 degrees F. The surplus water is then extracted, and after being boiled the mixture turns into a jelly-like substance which is run into molds, where it solidifies in thirty minutes. The soap then passes through stripping, cutting, drying and stamping machines until finally taking the form seen on the market. In manufacturing toilet soaps the first part of the process is much the same, the difference coming after the material has passed the stripping machine. Before going through the process of cutting, perfumes and dyes are added to give the mixture the desired scent and color. The soap is then sent to the pressing, cutting, drying and stamping machines for the further improvement of its appearance. The same process is employed in making medicated soaps, except that instead of perfumes chemicals such as camphor, sulphur, carbolic acid, iodine, and other disinfectants are added. Transparent soap is made in a similar way, but coconut oil used instead of other fat or oil, and alcohol and sugar added after saponification. There are many varieties of soap, grouped into four general classes, laundry soap, toilet soap, medicated soap, and transparent soap. Most of the Chinese factories produce only one kind, but some of them turn out more than one variety. The following list shows the products and brands of Kiangsu soap and candle factories:

	Brand	Products
International Dispensary	"Wuchow" (五洲) "Kupen" (固本) Lotus Leaves, and Lotus Flower, Green tree.	Laundry, Toilet, and Medicated Soap.
Ting Feng Soap Factory	Ox, May 30th, Globe, Electric Lamp.	Laundry Soap.
Nanyang Soap & Candle Factory	"Nanyang" (南陽) "Pao Kwang" (寶光).	Candles, Laundry Soap.
Yi Mou Soap Factory	Elephant Head, "Heaven" (天字) Banner.	Laundry Soap.
Sin Chang Soap Factory	Deer Head, "I Ping" (一品), Star.	Laundry Soap.
Sin Hua Soap Factory	Lightning, Moon-light, Two Boats.	Transparent Soap.
Li Ta Factory	"Li Ta" (立大), "Tien Kwan" (天冠), Pagoda & Hill.	Laundry Soap, Candles.
Yu Mou Soap Factory	"Shuang Hsi" (雙喜), Lion & Ball.	Laundry.
Chung Yang Soap Factory	Lime, Buddha Hand.	Medicated, Toilet, and Laundry Soap.
Hang Li Soap & Candle Factory	"A", Baby, Dog, Military Hat.	Laundry Soap, Candles.
Ai Hua Sui Chi Factory	Sisters, Dancing Girl, Beauty.	Toilet Soap.
Hua Chang Soap Factory	"Chuan Fu" (全福), Cock, Deer.	Laundry Soap.
Kuang Hua Chemical Industry Society .	Golden Dragon.	Transparent Soap.
Yung Woo Industrial Co.	"Yun" (永字), Girl In Moon.	Toilet Soap.
Hua Feng Toilet Soap Factory	Crane, Beauty, Two Beauties.	Toilet Soap.
Ta Hua Soap Factory	Old Tree.	Laundry Soap.

Siang Min Soap Factory	"Siang Ming" (祥民), Diamond, "Siang Hsin" (祥新), "Wei Yi" (唯一).	Laundry Soap.
Kung Mou Soap Factory	———	Laundry Soap.
Chen Chi Soap Factory	———	Laundry Soap.
Fu Chang Soap Factory	———	Laundry Soap.
Ta Teh Soap Factory	———	Laundry Soap.
Chen Hsin Soap Factory	———	Laundry Soap.
China Chemical Works	Three Stars.	Toilet Soap.
Fu Li Soap Factory	"Ta Chung Kuo" (大中國).	Laundry Soap.
Ta Chung Hua Soap Factory	"Ta Chung Hua" (大中華).	Laundry Soap.
Ting Chang Soap Factory	"Ting Chang" (鼎昌) Nos. 1 & 2 Flowers.	Laundry Soap.
Shun Chang Soap Factory	Shanghai, Gold Coin, Bees.	Laundry Soap.
Kuang Hua Soap Factory	Atlantic Ocean, Balance.	Laundry Soap.
Li Hsing Soap Factory	Peiping, Cross.	Laundry Soap.
Yi Ching Soap Factory	Swastika, "Ju-I" (如意).	Laundry Soap.
Chen Hua Soap & Candle Factory	"Chung Hua" (中華), Gold Mountain.	Laundry Soap, Candles.
Jen Mou Candle & Soap Factory	Red Boy.	Laundry Soap, Candles.
Siang Tai Candle & Soap Factory	"Siang Tai" (祥泰).	Laundry Soap, Candles.
Yuan Ho Factory	———	Candles, Soap.
Yun Mou Factory	———	Candles, Laundry Soap.

Ta Chung Soap Factory	———	Laundry Soap.
Chung Hua Soap Factory	———	Laundry Soap.
Mou Kang Soap Factory	———	Laundry Soap.
Wei Kung Soap Factory	———	Laundry Soap.
Yu Kang Heng Soap Factory	———	Laundry Soap.
Chen Hua Soap Factory	"Ta Chen Hua" (大振華), Wheel.	Laundry Soap.
Hsing Hua Soap Factory	———	Laundry Soap.
Ho Mou Sin Soap Factory	———	Laundry Soap.
Tung Mou Soap Factory	———	Candles, Laundry Soap.
Nan Yi Hsing Candle Factory	———	Candles.
Hua Li Candle Factory	Lion.	Candles.
Heng Hsing Yu Candle Factory	Steam Boat.	Candles.
Chien Tai Sing Candle Factory	———	Candles.
Yu Ching Feng Candle Factory	———	Candles.
Tung Tai Sing Candle Factory	———	Candles.
Chin Chang Candle Factory	———	Candles.
Yen Li Yuan Soap Factory	———	Laundry Soap.
Wan Li Hsiang Soap Factory	———	Laundry Soap.
Chung Hsing Soap Factory	Golden Cock.	Laundry Soap.
Chung Kuo Soap Factory	———	Laundry Soap.
Chung Hua Soap Factory	———	Laundry Soap.
Tung Yao Factory	———	Laundry Soap.
Sin Hua Factory	———	Candles, Soaps.

The output of Kiangsu candle and soap factories has been decreasing, owing to unsettled conditions in the interior, but the following tables shows the output of various localities in Kiangsu during 1932:

	No. of Factories	Output
Shanghai	10 candle factories	40,000 boxes of candles
	23 soap factories	13,400 boxes toilet soap
		2,300 boxes medicated soap
		640,000 boxes laundry soap
		6,000 boxes transparent soap
Chinkiang	5 candle factories	8,000 boxes candles
	6 soap factories	23 000 boxes
Nanking	1 candle factory	1,900 boxes candles
	3 soap factories	4,560 boxes
Nantung	2 candle factories	6,080 boxes
	2 soap factories	4,500 boxes
Wusih	4 soap factories	35,000 boxes
Wuchin	3 soap factories	27,000 boxes
Tanyang	4 soap factories	9,500 boxes
Kiangying	1 soap factory	3,000 boxes
Tungshan	5 soap factories	4.500 boxes

The candles manufactured by Kiangsu factories are sold in small towns and villages in the interior, but owing to the rapid development of electric lighting the demand for candles has decreased. As to soap, the products of small factories are sold locally or in neighboring districts, while those of the larger factories have a wider range of markets. The condition in Shanghai, however, is reversed. Products of large factories like the International Dispensary are consumed locally, while these of the smaller factories are sold to the interior.

The China Soap Company and Price's (China) Ltd., two British concerns established in China, are powerful competitors of Chinese soap and candle manufacturers. Imported soaps come mostly from the United States, but the toilet soaps produced by several Chinese factories like the China Chemical Industry Society and Ai Hua Sui Chi are in no way inferior to imported articles. The value of imports of candles and soaps into China during the three years ending 1931 are shown as follows:

	1929 (Hk. Tls.)	1930 (Hk. Tls.)	1931 (Hk. Tls.)
Candles	62,400	37,673	49,179
Household & laundry soaps ..	1,018,303	374,454	291,290
Perfumed & toilet soaps	1,735,040	1,929,014	1,274,159

The larger candle and soap factories usually have two sales departments, one for wholesale and one for retail business. Retail business is done on cash basis, while in wholesale trade a customer pays only a portion of the price of the goods ordered, the balance being settled on delivery.

In addition to its own sales departments, a factory often has a number of sales agents. A factory has only one agent in a particular locality, who must sell a certain amount of goods every month, the quantity being fixed by contract between them. The agent pays all local taxes and freight charges, and a commission is paid him by the factory if he sells the stipulated quantity.

In Kiangsu Province, particularly in the district of Wusih, there are still a number of candle factories of the old style, but as then products are only used for religious ceremonies, the number has greatly decreased in recent years, and the few remaining ones cannot hold out very long on account of the diminishing demand for their products.

COSMETICS

The manufacture of modern cosmetics, unknown in China before 1900, is becoming an important industry in Shanghai. The Kwong Sang Hong Factory (廣生行), the oldest and largest cosmetic factory in China, was established in Hongkong in 1908, operating a branch store in Shanghai. The first cosmetic factory opened in Kiangsu was the China Chemical Works (中國化學工業社), established in Shanghai in 1911, and after a few years this concern was able to open a branch factory. At present the company is operating two factories and is turning out cosmetics, mosquito incense, industrial chemicals, and condiments. More than 100 different varieties of goods are manufactured, and are very popular in local circles under the "Three Star" brand. Most of the machinery used is from Germany and the United States, with a few pieces turned out by local foundries.

Next in importance to the China Chemical Works is the Association for Domestic Industries (家庭工業社) started in 1917 with a capital of $10,000. Among its products toothpowder of the "Butterfly" brand is used in every part of China. The business of this company is growing more prosperous year by year, and its capital has been increased to $500,000.

In 1919 the H. A. Manufacturing Company, Ltd. (香亞公司), operating in San Francisco, transferred its activities to Shanghai, being financed by a group of wealthy Chinese merchants in the Pacific Coast port. The company's business was not very bright at first on account of defective management, but improved after reorganization.

In addition to these three pioneers in the cosmetic industry the Yung Woo Industrial Company (永和實業公司), Sincere Perfumery Factory (先施化粧品廠), Mei Sing Company (美星公司), Hua Nan Chemical Industry Company (華南化學工業社), China Brothers Company (中國兄弟工業社) and Peacock Chemical Industry Company (孔雀化工社) are also noted for their products.

The number of cosmetic manufacturers in Kiangsu at present runs to about 50, but with the exception of four in Sungkiang and Kiangtu, the industry is concentrated in Shanghai, the Sincere Perfumery Perfumery Factory, with a capital of $1,300,000, being the largest. The cosmetic industry employs in the aggregate approximately 2,000 persons, receiving monthly wages of from eight to 16 dollars. The following table gives the principal details:—

	Capital	No. of Operative	Main Products	Volume of Business, 1931
Kwong Sang Hong	$ 80,000	232	Florida water, cold cream, hair oil, and face powder	$ 200,000
H. A. Mfg. Co.	80,000	50	Florida water, cold cream, hair oil, and toothpaste	40,000
Association for Domestic Industries	410,000	222	Toothpowder and paste, cold cream, hair lotion, and mosquito incense	922,551
Yung Woo Industrial Co.	₮ 60,000	805	Florida water, hair oil, mosquito incense, and toothpaste	1,000,000*

*Including rubber articles, printing ink, etc.
†Including patent medicines and glass.

China Chemical Works	$ 400,000	409	Toothpowder and paste, cold cream, Florida water, and mosquito incense	800,000
Mei Sing Co.	5,000	26	Toothpowder and paste, and face powder ..	50,000
New Asiatic Chemical Works (新亞化學製藥廠)	50,000	170	Toothpowder and paste	120,000†
Sincere Perfumery Factory	1,300,000	260	Perfumes, pomade, Florida water, and cold cream	500,000
Hua Nan Chemical Industry Co.	20,000	19	Toothpowder, pomade, and cold cream	70,000
Cosmetics Department of the Talow Dispensary (大協藥房化粧部)	80,000	9	Cold cream	325,000
China Brothers Company	10,000	9	Face powder and talcum powder	120,000
Peacock Chemical Industry Co. ..	——	—	Pomade and hair cream	——
Chi Sheng Co. (濟生工業社)	10,000	8	Toothpowder, face powder and cold cream	50,000
Asia Industry Co. (亞州實業公司)	5,000	9	Tooth powder and paste, and talcum powder	40,000
Oriental Chemical Works (東方化學工業社)	10,000	12	Face powder and pomade	50,000
Tien Jan Chemical Works (天然化學工業社)	8,500	4	Toothpowder and paste and cold cream	4,500
Cheng I Industrial Co. (正義實業公司)	5,000	4	Toothpowder and face powder	18,000
New China Industrial Co. (新中華實業社)	10,000	10	Facepowder and Florida water	40,000

Lo An Cosmetics Mfg. Co. (樂安公司)	10,000	9	Pomade, toothpowder, and Florida water	25,000
Chiu Sung Cosmetics Mfg. Co. (就生化粧品公司)	20,000	18	Hair lotion, face powder, and pomade	16,000
Hua Sing Company (華星公司)	14,000	13	Toothpowder and paste	200,000
Mei Ling Company (美林公司)	15,000	14	Florida water and cold cream	40,000
Chang Ling Kee (章林記)	30,000	23	Perfumery, hair oil, and cold cream	17,000
Pao Chiang Co. (保祥行)	5,000	12	Face powder	8,000
Hui Fang Chemical Works (惠芳化學社)	5,000	8	Face powder and Florida water	1,000
Ta Chang Company (大昌公司)	5,000	6	Perfumed honey and pomade	20,000
Chin Chang Powder Mfg. Co. (金鋃化粧品廠)	5,000	15	Powdered papers and hair lotion	12,000
Great China Dispenary (中西藥房)	500,000	170	Cold cream and Florida water	1,500,000‡
Great Eastern Dispanary (中法藥房)	500,000	—	Cold cream and Florida water	108,000
Kiang Sung Chemical Works, Sungkiang (江生化學工業社)	1,000	3	Toothpowder, cold cream, and hair oil	4,000
Ming Sung Chemical Works, Sungkiang (民生化學工業廠)	1,000	2	Toothpowder, cold cream, and hair oil	3,000
Hsia Fu Chun, Kiangtu (謝馥春)	10,000	16	Face powder and hair oil	14,400
Wu Cheng Tai, Kiangtu (吳正泰)	2,000	22	Sanitary incense	18,000

‡Including sale of medicines.

SOURCE AND PRICE OF RAW MATERIALS

The raw materials used in the cosmetic industry include magnesium carbonate, calcium carbonate, starch, talcum powder, kaolin, peppermint oil, musk, perfume essences, glycerine, stearine, and borax.

Magnesium Carbonate—is abundantly supplied by home factories, such as the Association for Domestic Industries, which operates several factories in Shanghai, Wusih and Chinkiang, Chiu Ta Salt Refining Company (久大精鹽公司), Tangku (塘沽), Pu Hai Chemical Workers (渤海化學工業社), Haiku (海沽), Kuan Shih Chemical Works (匡時化會工業廠), Peiping, Wu Feng Magnesium Manufacturing Company (五豐製鎂廠), Ningpo, China Chemical Works, Shanghai, and the Yuyao Magnesium Carbonate Manufacturing Company (餘姚炭酸鎂廠), Yuyao (餘姚). The market price per picul of magnesium carbonate ranges from $24 to $30.

Calcium Carbonate—Supplies formerly came almost entirely from Japan, but are being gradually displaced by Chinese products. There are now three factories in Shanghai which make calcium compounds, the Great China (大中華), Chao Sing (肇新) and Hsing Yieh (興業), Calcium carbonate sells in Shanghai at from $4 to $6 a picul.

Starch—used in Chinese cosmetic factories is partly imported from Japan, Netherlands, and the Straits Settlements and partly supplied by home factories such as the Tien Chu Gourmet-Powder Manufacturing Company (天廚味精廠), China Chemical Works, Shanghai, and the Nan Ti Starch Factory (南堤澱粉廠), Juian (瑞安), Chekiang. The price of starch is about $18 per picul.

Talcum Powder—Fangshan, in Hopei Province, Kaiping and Haicheng, in Liaoning Province, Chinkiang and Wuhsien, in Kiangsu Province, and Tayeh (大冶), in Hupeh Province, all abound in this product. Both the Association for Domestic Industries and the Shun Chang Stone Pul-

verizing Works (順昌機製石粉廠), Shanghai, sell a considerable quantity of talcum powder every year, the former operating a factory in Yingkow (營口) specially for its preparation. The prevailing price in Shanghai is about $4 a picul.

Kaolin—costs about $15 a picul and comes principally from Poshan (博山), Shantung Province, Fowliang (浮梁) and Loping (樂平), Kiangsi Province, Kimen (祁門), Anhui Province, Tehua (德化) and Lungchi (龍溪), Fukien Province, and Luho, Kiangsu Province.

Peppermint Oil—sells at about $20 a pound and is prepared by a few small factories in Kian (吉安), Kiangsi, and Taitsang, Kiangsu, where peppermint is produced. In Shanghai the Yung Sheng Pepper Mint Company (永盛薄荷廠), Yung Woo Industrial Company, and Association for Domestic Industries are all noted for their peppermint oil.

Musk—The genuine article comes from Tibet and Tsinghai, but being very expensive, is very seldom used.

Glycerine—is mostly imported at about $70 a picul. Very few Chinese soap factories turn out this product, only a small quantity being produced by the International Dispensary Company (五洲固本皂廠), and the Nanyang Soap and Candle Factory (南陽燭皂廠).

Alcohol—Only the Foochow Industrial Company (福州實業公司) and the Central Industrial Laboratory (中央工業試驗所), Nanking, manufacture alcohol, which is consequently largely imported from Japan, Philippine Islands, and Netherlands India.

Stearine—is imported from Great Britain, the United States, Germany, and France, there being no home product. The price per 100 pounds is about $50.

Borax—costs about $32 a picul, and is mostly imported from Japan.

Essences.—The essential oils most commonly employed in Chinese cosmetic factories are the essences of almonds, aniseed, coconut, camphor, olive, clove, cassia, sandal,

lemon, mace, heliotrope, rose, reseda, violet, benzoin, tuberose, neroli, jasmine, etc. Most of these essences are abundantly produced in China, but owing to unsatisfactory methods of preparation their fragrance vanishes quickly. Recently, artificial musk has been produced by the Association for Domestic Industries.

PRINCIPAL MARKETS

The products of the small cosmetic factories, as a rule, do not have an extensive market. Among the principal manufacturers the Kwong Sang Hong finds Shanghai its chief field, while H. A. products are very popular in Kiangsu, Fukien, and the Straits Settlements. The goods produced by the Association for Domestic Industries are in demand throughout the country, and from Szechuen and other Yangtse Provinces the China Chemical Works draws a large amount of customers. Other factories, such as the Mei Sing Company and the Yung Woo Industrial Company, regard the Straits Settlements as their principal market.

Cosmetics were once considered articles of luxury, and were sparingly used even by the wealthy classes, but nowadays these articles are becoming daily necessities among the fair sex. Not satisfied with the quality of domestic products, the "society" women in Shanghai and many other ports use a large quantity of imported perfumery and cosmetics as well as toilet requisites. Though Japanese products have gradually disappeared from the Chinese markets, those from America and Europe are still in great demand, especially the products of the leading firms engaged in this business. The following table shows the total value of imports of foreign perfumery, cosmetics, and toilet requisites during the period from 1929 to 1931:

	1929 (Hk. Tls.)	1930 (Hk. Tls.)	1931 (Hk. Tls.)
Perfumery and Cosmetics (Including face powder and cream)	2,931,593	3,022,795	2,182,794
Toilet Requisites	783,641	975,299	755,368

TOOTHBRUSH

Prior to 1921 all toothbrushes used in Kiangsu were imported, mainly from Japan, the first Chinese factory being the Shuan Lun Toothbrush Company (雙輪牙刷公司) of Shanghai. This concern was established in 1921 by Chiao Tieh-chiao (趙鐵橋), and during subsequent years a number of similar factories sprang into existence. The following table shows the larger factories now operating in Kiangsu Province:—

	Organization	Established	Capital	Workers	Location	Motive Power
Shuan Lun (雙輪)	Corporation	1921	$40,000	130	Shanghai	20 h.-p
Chen Yu (振宇)	Partnership	1926	1,200	23	„	5 h.-p.
Liang Sin Chi (梁新記)	Single Proprietorship	1925	8,500	151	„	45 h.-p
Yi Sin (一心)	Corporation	1925	40,000	60	„	30 h.-p
Tien Lun (天輪)	Single Proprietorship	1928	2,000	6	„	5 h.-p.
Hua Shang (華商)	„	1912	600	8	„	—
Chia Ting (家庭)	„	1921	10,000	160	„	14 h.-p
Yang Shen Hsin (楊盛興)	„	—	100	3	Kiangtu	—
Chang Yi Hsin (張義興)	„	—	150	4	„	—
Chen Sin Chi (程新記)	„	—	300	11	„	—
Liu Wan Shun (劉萬順)	„	—	500	15	„	—
Han Shun Hsin (韓順興)	„	—	100	3	„	—
Ma Yung Mou (馬永茂)	„	—	200	4	„	—

Two factories in Shanghai are not included in the above list, the Sin Sin (心心) and Jih Kuang (日光). Toothbrushes are also made in such cities as Wuchin, Wusih, and Wuhsien, but only as a handicraft industry, and no facotry in the modern sense of the word is in operation.

Wages are either on a monthly basis or by piece-rate. Generally male workers are paid monthly, while women are on piece-work. The average monthly wage for a male worker is about $30, while the women receive from one to two cents for each brush.

RAW MATERIALS

The principal raw materials used in making toothbrushes are cowbones and bristles. The former are chiefly obtained from Tzeliutsing (自流井) in Szechuen Province, Tsining (濟寧), Shantung Province, and Siennuchen (仙女鎮), near Kiangtu and Nantung, but a considerable quantity is imported from abroad. Bones used for making handles are soaked in lime solution for about 10 days after being cut into pieces measuring six inches in length, after all impurities have been removed, are polished ready for use. Bristles are obtained from white-haired hogs, the best of which are raised in Chungking (重慶), Szechuen Province. They are bought in bundles of from two to eight inches in diameter and from 1.75 inches in length. The bristles are carefully bleached and sterilised before being inserted into the bone handles.

According to current market quotations, bristles cost from $280 to $1,400 per picul, and the freight from Hankow to Shanghai is $5 per picul. Sellers being required to pay a tax of 5 per cent *ad valorem*. On cow bones there is no freight charge to consider as factories obtain supplies from the bone-brokers in Shanghai.

PRODUCTION

The total value of toothbrushes made in Kiangsu Province is estimated at over $1,000,000, of which Shanghai's share is $780,000. Details in regard to the capacity of various factories are as follows:

	Annual Capacity	Value
Shuan Lun	12,000 gross	$240,000
Chen Yu	——	20,000
Liang Sin Chi	190,000 pieces	180,000
Yi Sin	13,000 gross	172,800
Hua Shang	120,000 pieces	60,000
Tien Lun	120,000 „	8,000
Chia Ting	1,000,000 „	100,000
Yang Shen Hsin	1,200 dozen	900
Chang Yi Hsin	2,000 „	1,600
Chen Sin Chi	3,000 „	2,400
Liu Wan Shun	3,500 „	3,600
Han Shun Hsin	1,200 „	900
Ma Yung Mou	2,000 „	1,600

The unit used in toothbrush business is the gross, while shipments destined for outside markets are packed in cases of 50 gross.

Most of the toothbrushes produced in Kiangsu Province are for local demand, though a small quantity is exported to Hongkong, the Philippine Islands, and Straits Settlements. The following table shows the quantities and values of exports from the three principal ports of the Province during the three years ending 1929:—

	1927		1928		1929	
	Pieces	Hk. Tls.	Pieces	Hk. Tls.	Piece	Hk. Tls.
Nanking	——	——	200	9	15,000	339
Chinkiang	——	——	54,216	1,703	59,760	1,660
Shanghai	434,812	22,498	686,797	34,649	755,483	34,718

The regions along the Yangtse Valley are the largest market for Kiangsu toothbrushes, with the districts along the Nanking-Shanghai and Shanghai-Hangchow Railways coming next, and North China third.

The best season is the spring, with autumn next, and in some small factories operations are carried on only while the market is the most active, in order to curtail expenses.

The mode of transacting business is very simple. The purchaser notifies the factory of the brand, variety, and quantity needed, and the goods are delivered within the period specified. Accounts are settled at the end of every month. Against orders from outports, other than in special cases, cash is required, and all deliveries are made at Shanghai.

COMBS

Chinese combs made of wood or horn are known as "*mu ssu*" (木梳), while those made of bamboo are called "*pi chi*" (篦箕). Horn combs are made mostly in Fukien Province, Wuchin being noted for the wooden and bamboo varieties.

There are altogether some 50 comb manufacturers in Wuchin, but the majority are very small concerns, the following being the most prominent firms in the business:—

	Capital	Workers
Chen Lao Pu Heng Shun (眞老卜恒順)	$2,500	19
Chen Lao Wang Ta Chang Yung Chi (眞老王大昌永記)	2,000	12
Wang Ta Chang (王大昌)	2,000	10
Wang I Ta (汪義大)	2,000	9

Hand labour is used exclusively throughout the process of manufacture, male workers earning from 10 dollars a month and women from six dollars. Apprentices receive no wages, but are given board and lodging and a small amount of pocket money at the end of every month and on festival days.

RAW MATERIALS

The wooden comb used in China differs considerably from the foreign-style article. The back is curved and is much thicker, while the sizes are either much larger or much smaller than the foreign article. Chinese ladies have a set of combs of varying sizes for different purposes. Combs are made of wood considered suitable for the purpose for their color, hardness, durability, and flexibility, these being the qualities most required. The best combs are made of boxwood (黃楊木), which is hard and durable, light yellow in color, and of high lustre when polished. This wood grows very slowly, and is not mature enough for comb-making purposes until at least 100 years old. If a box tree has been injured by a hatchet or otherwise when young, black spots appear in the grain, spoiling the appearance of the wood. Best quality boxwood is therefore not easy to obtain, and consequently the price is high. Supplies come from the Southern provinces where box trees grow in large numbers in temple grounds.

Another wood used for making combs, but inferior in quality, is jujube wood (棗木), which is of a dark reddish color in the centre, fading away at the edges to a yellow tinge. The jujube tree is found more or less throughout the country, but the best variety for comb-making comes

from Chekiang—such cities as Hangchow, Nanzin (南 潯) and Siashih (硤 石). Another wood resembling boxwood is "Shih Nan" (石 楠), which is of a light yellow colour, and combs of this wood are often sold as being made of box. Another wood coming from Chintan, is known as "pear" wood (梨 木), now used as a substitute for box and jujube wood, as supplies of the latter have shown a gradual decrease during the last 20 years. Bamboo required for making combs is brought from Chintan and vicinity, where the largest bamboos attain a height of 40 feet.

The bamboo comb is an exclusively Chinese product, entirely different in appearance from the wooden variety, the teeth being on both sides of a central stem. The general appearance can be described as similar to the bones of a fish, though the teeth of the comb are very much finer and closer than the bones radiating from the backbone of a fish.

The centre or "back" of a bamboo comb is frequently made of ivory, camel bone, boxwood, or ebony, only the cheapest varieties being made wholly of bamboo. Ornamental headpieces added to combs are made of ivory, camel bone, or horn.

PRODUCTION

Bamboo is bought ready cut into thin strips, bound in bundles, which are distributed to women workers for making comb teeth, known to the trade as "*pi tse*" (篦 刺). The teeth are fastened together, usually with silk threads, and glued to the centre. The combs are then passed to workmen whose business is to sharpen and polish the teeth. The more expensive combs are carved, painted or gilded on the central part.

The above is a very brief description of the manner of making bamboo combs, and it is said there are altogether 72 distinct processes, but wooden combs are made much more easily.

There are no statistics available as to the actual production of combs in Wuchin, but a rough estimate recently made puts the total at approximately 550,000 per year,

consisting of 250,000 wooden and 300,000 bamboo combs. The annual output of the two best known manufacturers during the last three years was as follows:

	Wooden Combs	Bamboo Combs
Chen Lao Pu Heng Shun	40,000	30,000
Chen Lao Wang Ta Chang Yung Chi	25,000	15,000

MARKETING

Shanghai, Hankow, Peiping, Tientsin, and Canton are the five principal markets for Wuchin combs, while the Straits Settlements and the Three Eastern Provinces form two other important markets, though the volume of business done with the latter has shown a very considerable decrease since the Manchurian "incident" in September, 1931. Combs for the Straits Settlements, Kwangtung and Kwangsi markets are shipped through Shanghai. Prior to 1926 the total trade in combs amounted approximately to $400,000, but the figure decreased to $300,000 in 1930, while a further decline is expected to be seen in later returns.

CHAPTER XIV

RICE-MILLING

THE RICE-MILLING industry in Kiangsu Province was was started in 1865 by the Hung Sheng rice-shop (洪盛米號) in Shanghai as a side-line to its ordinary business. It was not until 1900 that the Mei Chang mill (美昌機器碾米廠), organized by American merchants, was established solely for the purpose of rice-milling, but owing to the unpopularity of machine-milled rice among the Chinese, the mill closed down after a short perled of operation. The following year a Chines enterprise, known as the Yuan Chang rice-mill (源昌米廠), was established, and as this venture proved very successful during the next year the number of rice-mills in Shanghai increased to nine. The machinery installed in these mills was driven by steam, a 60 h.p. engine being used to work six machines. The number of machines in a large mill was 16, and in the smaller ones 9, while the cost of a steam-engine was about Tls. 6,000.

With the introduction of petroluem and Diesel engines the rice-milling industry entered upon a more prosperous period. Owing to the great reduction in price of power-plant, (oil-engines selling for about $1,700) mills were established in large numbers in many rice-producing centers, such as Changshu, Kunshan, Chinshan, Wusih, and Chinkiang. The introduction of cheap power units, however, led to a slump in the milling industry in Shanghai, where most of the big rice-shops installed plant to do the milling themselves. In the interior, however, conditions precisely opposite. On account of the unpopularity of power-driven machinery, oil-engines were in great demand, and their proximity to sources of supply, together with cheap local labor, gave rice-mills in the interior of Kiangsu a great opportunity for devlopment.

PRESENT CONDITIONS

Shanghai, Wusih, and Kiangning are the centers of the rice-milling industry in Kiangsu Province, having respectively 53, 27 and 38 mills. Chinkiang, with 25 mills, is also an important centre for this industry. Rice milled in Shanghai is mostly shipped there from neighbornig provinces; that in Wusih comes from local and surrounding districts, while the rice milled in Chinkiang and Kiangning comes from districts north of the Yangtse River. The following table gives some particulars of the industry in the 16 districts of the province:—

	No. of Mills	Total Capital	Machinery Power Engines	Machinery Milling Machines	No. of Workers	Annual Output (Piculs)
Shanghai	53	$361,000	53	126	429	1,209,600
Wusih	27	157,000	31	101	1,510	700,000
Chinkiang	25	53,400	—	—	85	93,500
Kiangning	38	109,600	42	112	473	850,000
Kunshan	18	130,000	26	77	469	740,000
Wuchin	8	22,000	8	21	78	80,000
Changshu	11	——	—	73	—	192,100
Kiangyin	15	——	—	—	—	150,000
Ihsing	5	——	—	—	—	200,000
Tsungming	1	2,200	1	1	—	4,800
Tsingpu	15	28,800	—	—	—	89,000
Kiangpu	3	3,500	—	—	—	18,000
Chinshan	30	75,400	—	—	—	176,000
Wuhsien	14	57,350	14	17	87	151,600
Kaoyu	15	101,700	15	15	104	164,300
Fenghsien	20	100,800	20	28	—	176,000
Kaoshun	42	50,000	50	65	178	85,000
Nantung	3	88,000	7	13	118	250,000
Tsingkiang	1	10,000	1	3	30	2,500
Nanhui	11	18,900	11	14	70	44,000
Fouing	11	500	1	1	8	20
Hsinghwa	21	——	21	30	—	105,000
Luho	10	46,500	10	20	75	60,000

CLASSIFICATION OF MILLS

According to the nature of the business done, rice-mills in Kiangsu may be classified in the following categories: (1) those milling for rice-merchants, such as Hwa Feng (華豐) and Sin Cheng (新誠) of Kushan; (2) those milling for rice-brokers, such as Heng Shen (恆盛) and Sui Tai (萃泰) of Shanghai; (3) those milling for their own

purposes, such as Heng Kang (恆康) and Ta Kang (大康) of Shanghai; (4) millers who are also brokers, such as Sin Chang (新昌) and Shen Li (愼利) of Shanghai and Teh Ta Yuan (德大源) of Wusih; (5) millers who are also retailers, such as Lung Shen (隆盛) of Shanghai; (6) those milling nothing but *hsien mi* (秈米), a variety of non-glutinuous rice from Anhui Province, such as Chen Hsin Shui (振興穗) of Shanghai; (7) millers also engaged in oil-pressing, such as Tung Tai (同泰) and Kung Hsin (公興) of Fenghsien; and (8) millers who also supply power, such as Tung Shan (東山) and Min Sin (明星), of Wuhsien.

CAPITAL INVESTED

The total amount of capital invested in the 388 rice-mils established in Kiangsu is $1,418,750, which gives an average of about $4,000 for each concern. The city having the highest average investment is Kaoyu, amounting to $6,780; while that with the lowest average is Kiangpu, amounting to $1,167. Of individual mills the Sin Chang, of Shanghai, has the largest capital, amounting to Tls. 20,000; while the Tien Yi (天一碾米廠) of Tsingpu is the smallest, being capitalized at $500 only. The following table shows the respective capitalization of the rice-mills in Kiangsu Province:—

Capital		Percentage
Over	$500	4.84
"	1,000	49.09
"	5,000	35.75
"	10,000	7.27
"	20,000	3.05

WORKING CONDITIONS AND WAGES

As the mills operate only during the few months of the year when rice is being harvested, the number of workers employed is very irregular. According to investigations made in 1932, the total number of workers employed by the 388 rice mills in Kiangsu was 3,744, with an average of 14 hands to each mill. The majority of these workers are piec-work employes, and are engaged and discharged according to the amount of work to be done, very few being regularly employed.

Wages vary according to the nature of the work done, and most workers are paid on a piece-rate basis. In Shanghai the highestpaid workers are those engaged in screning and polishing, receviing $.0029 per picul, while the lowest paid are the store-keepers, who receive $3 for each 10,000 sacks in stock. The rice-mills also employ a number of coolies for miscellaneous work who are paid from $4 per 1,000 piculs in the case of weighers, to $22 for porters. Wages are usually paid three times a month at intervals of 10 days.

MECHANICAL EQUIPMENT

The motive power used in the early days of the industry was steam, and engines were very costly, but latterly electric motors have been largely used, costing Tls. 400 for American and $130 for Chinese-made units. The rice-miling machines are very cheap, selling at from $80 to $120 each. The average output of one machine in a 9-hour day is 50 piculs of *hsien mi*, 40 uiculs of *keng mi* (粳米), or 35 piculs of *nu mi* (糯米) or glutinous rice. According to a recent investigation, there are altogether 414 engnies and 860 rice-milling machines in the rice-mills of Kiangsu province, the average being 1½ engines and 2 machines for each mill.

Recently Mr. Chou Sung-fan (鄒頌範), proprietor of the Chou Chen Tai mill (鄒成泰機器碾米廠), Wusih, invented a new type of screening machine, selling at $1,000, which disposes of 35.7 piculs of rice per hour, equal to the work of 18 men. A smaller model is sold at $800, handling 21 piculs per hour, or equal to 12 men's work.

SOURCES OF SUPPLY

Rice milled in Kiangsu is grown locally or shipped from neighboring provinces. Generally speaking, rice milled in Shanghai comes from various districts in Anhui, Hunan, Hupeh, and Kiangsi; Wusih mills handle rice from Ihsing, Kiangyin, Wuchin Tanyang, and Liyang; Chinkiang mills take supplies from Kiangtu, Kaoyu, and Paoyin; and Nantung mills from Yencheng, Jukao, Haimen and Chitung.

LOSS IN MILLING

The percentage of loss in the milling process varies according to the variety of paddy used. In Changshu and Wusih the loss in milling "special white" is 23.3 per cent; "first grade white," 20 per cent; "second grade white," 17.7 per cent; and the so-called "hygienic" rice, 12.2 per cent. In Wuhsien the loss for first and second grade white rice is 15.5 per cent; in Sungkiang and Tsingpu from 20 to 30 per cent for "special white," 20 per cent for first grade white, 17.7 per cent for second grade white, 14.4 per cent for third grade white, and 11.1 per cent for "hygienic" rice.

MILLING PROCESSES AND CHARGES

In making paddy into white rice the grain undergoes three or sometimes four processes. The first is to remove the husk, the second to put the rice in the mill to remove the thin brown skin and the third step is known as second milling, which is done by adding a certain amount of stone powder during the process of milling. For high quality rice a third-milling is applied, but generally this is unnecessary, for after second milling the rice is good enough for marketing.

The charges for milling differ in different localities. At Tsingpu the average is $0.20 per picul; at Fenghsien, $.18; and at Wuchin, $0.15. At Shanghai the cost for second-milling is $0.23 per picul for *hsien mi*, $0.25 for *keng mi*, and $0.27 for *nu mi*. The Wusih mills charge different prices for different of rice at different millings, as follows:

	First Milling	Second Milling	Third Milling
	per picul	per picul	per picul
Hsien mi	$0.08	$0.10	$0.12
Keng mi	0.10	0.12	0.14
Nu mi	0.12	0.14	0.16

In addition to these charges the rice merchant has to pay for loading and unloading, screening, and bagging. The charges for loading are $0.01 per picul on land, and $0.014 per picul on boats, and for unloading, $0.012 per

picul. Screening is charged for at different prices. The first screening is usually free, the third screening is charged at the rate of $0.006 per picul, and the fourth at $0.012 per picul. The charge for putting rice in gunny sacks is $0.003 per picul.

The stone powder employed to whiten the rice is used at the option and expense of the merchants. It is sold at $0.60 per picul, and for every picul of rice milled, about six catties of powder are added, valued at $0.036. In Shanghai, howevr, the Bureau of Social Affairs has limited the proportion to not more than two catties of stone powder to every picul of rice.

Bran and broken rice left over after milling is usually sold at about $1.30 and $6 per picul respectively. From every picul of rice milled about 15 catties of bran, and two *sheng* (升) of broken rice, is obtained. If the rice merchant wishes the bran and broken rice returned to him after milling, he has to pay $0.02 extra for every picul milled.

Godown fees vary in different localities. At Shanghai the usual practice is no charge for the first month, but $0.05 per picul is charged for the second month, $0.04 for the third month, and $0.03 a month after the third. At Wusih no charge is made during the first week, but after eight days a charge of 0.006 per picul is made; after one months, $0.008; after 1½ months, $0.012; after 2 months $0.017; after 2½ months, $0.02; after 3 months, $0.024; and the additional charge of $0.002 is required for every half-month after the third month.

In Shanghai the rice mills usually loan large sums of money to their custoomers, and charge interest as high as 13 or 14 per cent. Such cients generaly come from the interior, and rely on financial assistance from the mills to keep them in funds when in Shanghai.

CHAPTER XV

FLOUR MILLING

IN SPITE of the wide distribution of modern flour mills in various parts of China, there are in the interior many farmers either too ignorant or too poor to use machinery in the production of flour. The only mechanical apparatus they use consists of a pair of mill-stones, between which the grain is crushed. It is only in large villages or towns that old-fashioned flour-mills are found, and these establishments are on a very small scale, with two or three pairs of mill-stones, operated by cattle. The work is usually done at night, so that the flour is ready for sale next morning.

The flour produced in old-style mills of this kind can be divided into many categories. In Peiping, for instance, flour is classified according to quality into *tou lo* (頭羅) (first quality), *er lo* (二羅), *chung lo* (重羅), *cheng mien* (蒸麵) and *hei mien* (黑麵). On an average, one *tou* of wheat yields 18 catties of flour and three or four catties of bran.

According to an investigation made by the Ministry of Agriculture, Labour and Commerce in 1925, the number of old-style flour-mills in the northern part of Nanking was 20, each equipped with two or three pairs of mill-stones, working day and night. The flour produced is classified into *ku fu* (枯麩), *fei fu* (肥麩), *shang mien* (上麵), *chung mien* (中麵) and *hsia mien* (下麵), *shang mien* being the highest quality. Another investigation in 1932 revealed that there were no less than 55 old-style

mills of fair size, with a total capital of $44,144 and aggregate annual output of 43,660 piculs (worth $263,960) in the four districts of Yencheng, Founing, Kaoshun and Lienshui north of Yangtse, as follows:—

	No. of Mills.	Capital	Output (piculs)	Value
Yencheng	6	$ 2,600	2,150	$ 12,900
Founing	10	1,000	2,310	13,860
Kaoshun	13	40,000	35,000	210,000
Lienshui	26	544	4,200	27,200
Total	55	44,144	43,660	263,960

The history of modern flour-milling in China goes back to 1896, when a number of German merchants in Shanghai established the China Flour Mill (增裕麵粉公司) The Fou Foong Flour Milling Co., Shanghai (阜豐麵粉公司), the Pao Hsin (保興) of Wusih—now Mou Sin No. 1, the Li Yung (利用), Hangchow, the Yi Sin (益新) Wuhu, and the Ta Hsing (大興), Nantung, were among the earliest Chinese establishments, the total number of which is now about 130, and 28 of these are in Kiangsu.

Thus, flour-mills in China fall into two general categories, old-style and modern, and strictly speaking should be separately treated. The former type, however, are mostly found in remote country places, and owing to their extremely large number and scattered location, an inclusive investigation is almost impossible. Moreover, the flour produced is much inferior in quality and limited in quantity compared with the product of modern mills, and in the present article no attempt will be made to present any details concerning them.

Kiangsu Province ranks second only to the Three Eastern Provinces in importance as a flour-producing centre. South of the Yangtse, along the Nanking-Shanghai Railway, in such cities as Wusih and Shanghai, there are about 23 mills equipped with power-driven machinery from abroad. The development of the milling industry in this Province may be divided into three stages—preliminary 1895 to 1911, the boom 1912 to 1921, and the present period from 1922 to date. At the very beginning, the industry developed much more rapidly in the Three Eastern Provinces than in Kiangsu, though the Fou Foong Flour Mill Co., Shanghai, established in 1898, was the first enterprise of its kind in China—with the exception of the German concern, the China Flour Mill, already mentioned. After the Russo-Japanese War, however, the situation became completely reversed in consequence of the changed Russian industrial policy in North Manchuria, which hampered the flour industry in that part of China to no small extent. Meanwhile, taking advantage of this, mills in Shanghai were able to dispose of a large part of their product in the Northeast, with the result that in the course of a few years the number of mills increased so considerably that in 1911 there were no less than 15 operated in Shanghai and Wusih.

The years following 1911 witnessed increasing prosperity until the climax was reached during the European War, when a keen demand for flour came from all the belligerent countries in consequence of the conversion of their ordinary industries into centres for the manufacture of war supplies. The Customs returns show that the export of flour from China in 1920 was almost five times that in 1912, and 40 times the amount recorded in 1913. This favorable state of affairs encouraged capitalists to invest largely in the milling industry, and in 1921 the number of mills in Kiangsu rose to 21, as against 15 in the period prior to the establishment of the Republic.

After the Armistice, as a result of the gradual recovery of nominal industrial conditions in Europe and America, as well as increasing wheat acreage in many countries, flour exports to China from Japan, the United States, Australia, and Canada increased considerably until the market became so congested that the very existence of the Chinese mills was threatened. Thus, during the last decade, almost every year saw the closing of mills, while new establishments were very few. The following table shows the position:—

	No. of Mills Established					
	Shanghai	Wusih	Other Cities	Total	No. Closed	No. In Operation
Preliminary Stage:						
1896-1901	2	1	1	4	0	3
1902-1906	4	0	3	7	0	3
1907-1911	2	1	1	4	0	4
"Boom" Period:						
1912-1916	9	2	1	12	1	6
1917-1921	6	1	2	9	2	7
Present Period:						
1922-1926	4	1	0	5	7	3
1927-1931	1	0	2	3	6	2
Total				44	16	28

The three mills closed during the period from 1912 to 1921 resumed business very soon under new management, while most of those suspended in later years have never resumed operations, owing to the ever-increasing competition of foreign mills.

Among the 28 flour-mills now in operation in Kiangsu 14 are in Shanghai, four in Wusih, three in Nanking, and one each in Chinkiang, Wuchin, Nantung, Taihsien, Huaiyin, Tungshan, and Tunghai, particulars being as follows:

	Location	Estab-lished	Capital	Machinery No. of Mills	Machinery No. of Rollers	Annual Wheat Consumption (piculs)	Annual Capacity (bags)	Annual Production (bags)	Brands
Tou Foong (阜豐)	Shanghai	1896	$1,000,000	91	5,000	2,013,000	7,200,000	4,026,000	Bicycle, Double Fish, Double Tigers. Green Gun-carriage.
Fu Sing (福新)	Nantung	1900	625,000	19	——	500,000	1,800,000	1,500,000	Rising Sun. The Great Wall.
Mow Sing No. 1 (茂新一廠)	Wusih	1901	600,000	36	——	400,000	2,400,000	800,000	Red and Green Battleship.
Yui Tung (裕通)	Shanghai	1904	500,000	24	1,600	825,000	2,400,000	1,649,000	Bicycle, Double Fish, Double Tigers, Green Gun-carriage.
Hai Foong (海豐)	Tunghai	1905	200,000	15	450	300,000	700,000	600,000	Double Globes, Double Dragon Globe.
Ta Foong (大豐)	Huaiyin	1905	100,000	12	——	150,000	600,000	400,000	Ho-Ho (和合).
Tai Lai (泰來)	Taichow	1907	224,000	13	——	450,000	1,000,000	900,000	Three Goats, Golden Tripods.
Li Dah (立大)	Shanghai	1909	70,000	12	——	400,000	1,000,000	800,000	Fort, Reed Wild Geese, San Do (三多), Unicorn and Phoenix, Ho-Ping (和平), Chin-Pao (進寶), Fortune.

Kiu Foong (九豐)	Wusih	1909	280,000	36	—	250,000	700,000	560,000	Dear, Five Bats.
Seng Dah (申大)	Shanghai	1910	210,000	24	—	435,000	1,140,000	1,000,000	Double Horse, Precious Horse, Jen Chung (人鐘).
Foh Sing No. 4 (福新四廠)	Shanghai	1914	250,000	32	—	—	—	—	Red and Blue Sun and Moon Flag, Old Fisherman.
Foh Sing No. 2 (福新二廠)	Shanghai	1914	900,000	48	—	—	—	—	Old Fisherman, Happiness, Star, Battleship.
Tai Lung (泰隆)	Wusih	1914	400,000	23	—	300,000	1,500,000	600,000	Green Eagle-Globe, Green Dragon-Globe, Man-Globe.
Yee Cheng (貽成)	Chinkiang	1914	700,000	18	—	300,000	700,000	600,000	Chinshan (針山), Elephant Head, Horse-Globe.
Wah Foong (華豐)	Shanghai	1914	140,000	15	1,600	600,000	1,000,000	1,000,000	Wheat, Double Peach.
Mow Sing No. 2 (茂新二廠)	Wusih	1916	600,000	24	—	400,000	1,000,000	800,000	Red Battleship, Green Battleship.
Chung Hwa (中華)	Shanghai	1918	168,000	18	800	500,000	1,392,000	1,153,000	Green Three-Star.
Heng Foong (恆豐)	Wuchin	1920	200,000	10	—	200,000	576,000	435,000	New Lion, Double Lion.
Foh Sing No. 7 (福新七廠)	Shanghai	1920	1,500,000	50	2,000	1,800,000	4,680,000	3,645,000	Green Star.

Foh Sing No. 8 (福新八廠)	Shanghai	1919	800,000	56	——	——	——	——	Old Fisherman, Happiness, Star, Battleship.
Ziang Sing (祥 新)	Shanghai	1921	400,000	12	600	450,000	1,080,000	800,000	Red Phoenix, Five Bats.
Ta Tung (大 同)	Nanking	1921	1,000,000	24	——	600,000	1,500,000	1,200,000	Moon and Rabbit.
Pao Hsin (寶 興)	Tungshan	1921	200,000	12	——	180,000	540,000	470,000	Big Coin.
Foh Sing No. 1 (福新一廠)	Shanghai	1922	500,000	15	600	360,000	864,000	720,000	Green Star.
Sing Dah (信 大)	Shanghai	1022	500,000	16	800	700,000	1,500,000	1,400,000	Castle, Reed Wild Geese, San Do (三多), Unicorn and Phoenix, Ho-Ping (和平), Ching-Pao (連寶), Fortune.
Foh Sing No. 3 (福新三廠)	Shanghai	1926	500,000	24	800	1,000,000	1,920,000	1,600,000	Star.
Tai Tsang (太 倉)	Nanking	1930	120,000	6	——	85,000	200,000	180,000	——
Yangtse (揚子)	Nanking	1931	300,000	12	——	600,000	1,200,000	1,000,000	Yangtse, Dragon and Horse, To Tse (多子),
TOTAL			12,987,000	696	——	19,198,000	51,352,000	40,100,000	Eight Diagrams.

Of the total capital of $12,987,000 invested in the 28 mills listed above, Shanghai claims $7,438,000 or approximately 57 per cent, Wusih $1,880,000 or 14 per cent, Nanking $1,420,000 or 11 per cent, while the other seven districts together share $2,249,000 or 18 per cent. The Foh Sing, which owns six mills with a total capital of $4,450,000, and its affiliated concern, the Mow Sing, which operates two mills, are the most influential firms in the milling business, though the Fou Foong combined with the Yui Tung is prominent.

The machinery installed in these mills is mostly American and British, with some German machinery also in use. The size of the steel-rollers ranges from 24 to 44 inches, and the milling machinery, with auxiliary plant such as purifiers, sifters, separators, scourers, transporters, bagging machines, etc. are driven either by electric or steam power. The combined power capacity of mills in various cities is as follows:

	No. of Mills.	Total Power Capacity. Motors. (h.p.)	Steams Engines. (h.p.)
Shanghai*	13	10,230	285
Wusih	4	450	1,775
Nanking	3	100	960
Other cities	7	——	2,130
Total	27	10,780	5,150

There are no female workers employed in any of the flour mills, and the total number of operatives in the 28 mills is 4,072, mechanics receiving the highest wages, with $120 a month as the maximum. The salary paid to clerks is extremely low, the average being only 13.10 per cent higher than the ordinary workers' wage.

With the exception of the Foh Sing and Mow Sing, which are of unlimited liability, most of the mills are limited companies, issuing stocks, though some concerns in the interior are operated as partnerships or under

*Not including Wah Foong Flour Mill Co.

individual proprietorship. Most of the large mills have eight departments under direction of a general manager —general affairs, accounting, sales, purchasing, wheat, warehouse, transport, and engineering departments. The distinction between the wheat and purchasing departments lies in the fact that the former has charge of buying and inspecting grain, whereas the latter attends to the purchasing of other material and equipment.

The total annual consumption of wheat by the Kiangsu mills amounts to approximately 19,198,000 piculs, distributed as follows:

Shanghai	14,593,000
Wusih	1,350,000
Nanking	1,385,000
Nantung	500,000
Taichow	300,000
Tunghai	300,000
Wuchin	220,000
Chinkiang	220,000
Tungshan	180,000
Huaiyin	150,000
Total	19,198,000

The actual capacity of the mills, however, is much larger, since most of them operate only six months in a year owing to lack of wheat supplies. According to the "Statistical Monthly," the Chinese production of wheat in normal years aggregated approximately 427,219,350 piculs, of which 383,953,120 piculs come from China Proper (not including Kwangsi), 29,774,990 from the Three Eastern Provinces, while supplies from other parts of China (not including Tsinghai and Tibet) totalled 13,491,240 piculs. Details are given below:

	Piculs.
Honan	62,164,420
Shantung	61,001,970
Kiangsu	55,514,160
Hopei	33,075,060
Hupeh	28,700,170
Anhui	28,558,570
Szechuan	26,462,560

Shensi	18,754,470
Shansi	17,274,280
Kansu	12,475,620
Chekiang	11,741,810
Yunnan	6,192,990
Fukien	5,372,250
Hunan	5,125,520
Kiangsi	4,979,310
Kuichow	4,572,690
Kwangtung	1,987,270
Total China Proper	383,953,120
Kirin	13,842,390
Heilungkiang	12,450,150
Liaoning	3,482,450
Total Three Eastern Provinces	29,774,990
Sinkiang	7,620,660
Suiyuan	2,308,890
Jehol	1,262,350
Chahar	1,246,670
Ninghsia	1,052,670
Total Other parts of China	13,491,240
Grand Total	427,219,350

The preceding table shows that China is a country abounding in wheat. The crop in Kiangsu alone, if the foregoing estimate is correct, is more than sufficient to supply all the mills in that province, so that the lack of wheat for milling which has been mentioned must be due to some other reason than actual shortage of grain. Formerly, most of the wheat for the Kiangsu mills was purchased from Hopei, Shantung, Honan, Hupeh and Shensi, but political unrest in the North during recent years has greatly affected business with that part of China, owing to difficulties of transportation. Instead of buying from distant suppliers, Kiangsu mills now look to Wuhsien, Wusih, Wuchin, Chinkiang, Kaoyu, Kiangyen (姜堰), Chentung (溱潼) and Mingkuang (明光) for their wheat supplies. In May and June, agents are sent to these places to buy the new crop, but sometimes the quantity collected is so small that imported wheat has to be bought after October. Consequently, in

spite of the large production of wheat at home, imports from abroad in 1930 and 1931 amounted respectively to 2,591,131 and 19,419,099 piculs, distributed among three leading flour-producing districts as follows:

	1929		1930		1931	
	Piculs.	Hk. Tls.	Piculs.	Hk. Tls.	Piculs.	Hk. Tls.
Shanghai	5,464,079	20,625,913	2,391,154	11,238,397	19,419,099	74,133,513
Nanking	—	—	184,779	794,817	997,582	4,208,642
Chinkiang	—	—	115,198	481,018	514,835	2,026,242
Total	5,464,079	20,625,913	2,691,131	12,514,232	20,931,516	80,368,397

Imported wheat milled in Wusih is mainly brought from Shanghai, while in the interior, north of the Yangtse, where adequate means of transportation are not available, very little foreign wheat is used. Thus, the Fu Sing of Nantung obtains wheat from neighboring cities, such as Kaoyu, Paoying, Taihsing, and Tungtai; the Hai Foong, of Tunghai, gets supplies from Suchow; the Pao Tsin, of Tungshan, takes grain from Pengpu and districts along the Grand Canal in addition to the local supply; and the Tai Lai, of Taichow, and the Ta Foong, of Huaiyin get wheat from various cities north of the Yangtse.

There are many reasons why modern mills are obliged to use imported wheat instead of Chinese grain. In the first place, Chinese wheat is mostly inferior in quality, and not suitable for making high-grade flour. Secondly, the difficulty and high cost of transportation in the northern districts of the Yangtse create great reluctance among millers along the Nanking-Shanghai Railway to buy wheat from that part of the country, thus giving an opportunity for foreign exporters to sell on the Chinese market. Moreover, the fact that Northerners consume more wheat than rice makes it impossible for them to dispose of any considerable quantity of grain for milling. In fact, what the mills collect is only the little left over after sufficient wheat has been set aside by farmers for their own food. Lastly, the large number of old-style mills in rural districts must have taken quite a large proportion of the available wheat supply from their modern rivals.

The best wheat for making flour is perfectly dry, free from insect damage, fully ripe, and hard, and must be

large grained. The Shanghai Produce Exchange (上海雜糧交易所) regulates the price of wheat according to specific gravity; thus,

1.—Standard "Large Grain" Wheat.

Grade	Weight per Picul (*Ssu Ma* scale)*	Remarks
I	141 catties	Wheat weighing 141 catties per picul sells two cents more than that which weighs from 139 to 140 catties—standard wheat on the Exchange. A two-cent increase in price is allowed for each additional catty until the maximum of six cents is reached.
II	139-140 „	Standard wheat on the Exchange.
III	137-138 „	Wheat weighing 138 catties is two cents cheaper than standard wheat, and grain weighing 137 catties is five cents cheaper.
IV	135-136 „	Nine cents cheaper than standard for wheat weighing 136 catties, and 13 cents for grain weighing 135 catties.
V	133-134 „	The price of 134-catty wheat is 18 cents lower than standard wheat, while wheat of 133 catties sells 25 cents cheaper.

2.—Substitutes—"Medium Grain" Wheat.

I	144 catties	This is two cents dearer than standard wheat, which weighs 143 catties. Every additional catty fetches two cents more until the maximum of six cents is reached.
II	143 „	Standard wheat.
III	140-141 „	Wheat weighing 141 catties is two cents cheaper than standard while that of 140 catties is five cents cheaper.
IV	138-139 „	Wheat weighing 139 catties sells nine cents cheaper than standard while that weighing 138 catties is 13 cents cheaper.
V	136-137 „	Wheat of 137 catties fetches 18 cents less than standard, while that weighing 136 catties and lower fetches, 25 cents less.

3.—Substitutes—Other Varieties of Wheat.

a. Hankow wheat—10 cents cheaper than standard.
b. Pootung wheat—10 cents cheaper than standard.
c. Yellow husk wheat from Shanghai, Paoshan, Kashing, etc.—10 cents cheaper than standard.

(Old wheat and mixtures of large and small grains are not acceptable on the Exchange as substitutes.)

*A *ssu ma* scale picul is equal to 105 catties and two Shanghai *liu* (斤)

Chinese wheat used in the Kiangsu mills comes from districts both north and south of the Yangtse. The variety grown in Wusih and Wuchin is especially good, always superior to standard wheat, and the wheat raised in Mingkuang, Anhui province, is also known as being of fine quality. With regard to imported wheat, the American is either white or brown, while the Australian cereal is of a red colour. White wheat has a comparatively thin skin and can be ground into very white flour, but falls short in gluten content. The brown variety is more solid and rich in gluten, but the flour is dark in colour. The Australian wheat has qualities similar to those of the brown wheat from America. The wheat grown in Wusih and Wuchin is excellent, containing 45 to 50 per cent of gluten (the normal gluten content of foreign wheat ranging from 30 to 40 per cent), its only defect being that it contains more foreign matter than the imported cereal.

Mills obtain Chinese wheat either direct from their own collecting agents or from grain dealers, many concerns sending buyers to Soochow, Wusih, Kaoyu, Kiangyen, Chentung, and Mingkuang during the harvest season. Large mills such as the Foh Sing and the Mow Sing maintain regular offices for this purpose, and as a rule it is only wheat from remote districts that it bought through dealers, who dispose of stocks either by personal approach to the mills or through the Exchange.

With regard to imported wheat this business is generally handled by foreign firms in Shanghai, notably, by Messrs. A. R. Burkill & Son, the Mitsu Bishi Shoji Kaisha, Mitsui Bussan Kaisha, etc. These firms sell to the mills either direct or through other local merchants. When foreign firms act as purchasing agents for the mills, payments to the former are in the nature of brokerage.

FLOUR PRODUCTION

There is no mill in Kiangsu province which can produce flour to its full capacity, owing to irregular supplies of wheat. The mills in Wusih usually operate for only six

months in a year, and according to an estimate made recently, the total production of flour in this Province is only about 80 per cent of the actual machine capacity. The following table shows further details on this head:—

	Capacity. (bags)	Production. (bags)	Percentage.
Shanghai	36,836,000	30,055,000	81
Wusih	4,200,000	2,760,000	66
Nanking	2,900,000	2,380,000	82
Other cities	5,316,000	4,905,000	92
Total	49,952,000	40,100,000	—
Average	——	——	80

Formerly, Chinese flour was packed in bags of 50 pounds, but since 1924 the content per bag has been reduced to 49 pounds, following the foreign standard.

The amount of flour obtainable from a given quantity of wheat varies greatly with the nature of the grain. American brown wheat is considered the best in this respect, each picul yielding about 77 catties of flour and 22 catties of bran. As to American white and Australian wheat, every 100 catties yield approximately from 75 catties of flour, with 22 or 23 catties of bran. The native wheat is the worst in respect of yield, and only about 70 catties of flour can be obtained from a picul of this grain.

However, not every catty of flour obtained from a given picul of wheat is of standard quality. On an average, of every 73 catties of flour made from a picul of wheat, 50 will be first grade, 16 second, and the remainder third grade.

Years ago, wheat bran was used in China exclusively for cattle feed, and it would have seemed incredible that bran could become a staple export from China. Japan was the first country using Chinese bran, and the demand is constantly increasing, while the bran market in China has shown considerable extension in consequence of its wider use for various industrial purposes.

Wheat bran has never been sold under any brand in the same way as flour, its quality being determined solely by colour. The total annual production in Kiangsu Pro-

vince is put at 4,415,540 bags of 100 catties, according to a conservative estimate.

LOCAL AND OVERSEA MARKETS.

Flour produced in Kiangsu is mainly consumed locally, more especially in the large ports of the coastal provinces, such as Kwangtung, Fukien, Hopei, the Three Eastern Provinces, etc. Flour made in Shanghai and Wusih, however, is also exported to the Straits Settlements and Hongkong, while during the World War there were occasional demands from Japan, America and Europe.

Each mill has a more or less definite area in which it disposes of its products, as shown in the following table:

	Location of Mill	Principal Markets.
Fou Sing No. 1	Shanghai	All Chinese provinces
Fou Sing No. 2, 4 and 8	,,	Kwangtung, Fukien, Peiping, Tientsin and the Three Eastern Provinces
Fou Sing No. 3	,,	All Chinese provinces
Fou Sing No. 7	,,	,, ,, ,,
Fou Foong	,,	Shanghai, Tientsin and Straits Settlements
Yue Tung	,,	Shanghai, Tientsin, Straits Settlements, Fukien and Kwangtung
Seng Dah	,,	Kiangsu, Chekiang and Fukien
Li Dah	,,	Shanghai, Kwangtung, Ningpo, Tientsin, Antung and Tsingtao
Wah Foong	,,	North China and Straits Settlements
Sing Dah	,,	Tsingtao, Shantung, Tientsin, Ningpo, Shanghai and Kwangtung
Ziang Sing	,,	North China, Straits Settlements and Yangtse ports
Chung Wha	,,	Swatow, Hankow and Chekiang
Tai Lung	Wusih	Soochow, Changchow, Shanghai, Nanking, Yangchow, Hangchow and Wenchow
Mow Sing No. 1 and 2	,,	Kiangsu, Chekiang, Hopei and Liaoning
Kin Foong	,,	Shanghai, Soochow, Hangchow, and other neighboring districts
Heng Foong	Wuchin	Kiangsu, Chekiang and Anhui
Ta Tung	Nanking	Kiangsu and Anhui
Tai Chang	,,	Nanking
Yangtse	,,	Kiangsu and Anhui
Ta Foong	Hualyin	Districts north of Yangtse, Chinkiang, Shanghai and Tientsin
Yi Chang	Chinkiang	Kiangsu, Anhui, Shantung, Fukien, Hopei, Hupeh, Kiangsi, Chekiang
Fu Sing	Nantung	Fukien, Tientsin and Shanghai
Pao Hsin	Tungshan	Suchow, Honan and Shantung
Hai Foong	Tunghai	Tunghai, Honan, Shensi and Shantung
Tai Lai	Taihsien	Districts north of Yangtse

The quantity of flour exported from Shanghai is very small compared with the principal exports of the port. According to Customs returns, shipments to Hongkong and other ports during the past decade were as follows:

	To Hongkong (Piculs)	To Other Ports. (Piculs)	Re-exports. (Piculs)
1919	384,000	1,432,000	231,000
1924	47,000	107,000	194,000
1925	101,000	180,000	216,000
1926	8,000	110,000	47,000
1927	2,000	112,000	51,000
1928	12,000	60,000	192,000
1929	7,000	17,000	24,000
1930	1,000	1,000	700

It is mainly through one or other of the four following channels that the output of the Kiangsu flour-mills finds an outlet in Chinese provinces:

Sales Offices—These are maintained by large mills in different districts in order to facilitate sales.

Merchants in the Interior—These seldom buy flour direct from mills, transactions being usually handled through the intermediary of brokers. The merchants are classified into Northern and Southern groups, the former being sub-divided into Tientsin, Tsingtao, Yingkow and Newchwang groups, and the latter into Straits Settlements, Swatow, Amoy, and Foochow groups. Large buyers usually maintain regular representatives in various milling districts, while others send out purchasing agents when their services are necessary.

Local Rice and Flour Shops—In Shanghai flour is usually sold at rice-shops, but in the interior concerns are established to sell flour exclusively. In both cases the shops obtain supplies direct from the mills and retail them to local consumers.

The Shanghai Flour Exchange commenced operations in 1921, with 11 mills as members—the Foh Sing Nos. 1 and 3, Yue Tung, Sing Dah, Seng Dah, Chung Wha,

Ziang Sing, and Wah Foong of Shanghai, and the Kiu Foong and Tai Lung of Wusih. The following shows the total annual turnover on the Exchange during the past decade:—

	Bushels.		Bushels.
1922	79,473,000	1927	104,025,000
1923	103,947,000	1928	123,295,000
1924	155,757,000	1929	93,661,000
1925	189,441,000	1930	165,886,000
1926	156,610,000	1931	295,337,000

CHAPTER XVI

OIL MILLING

VEGETABLE oils constitute one of China's principal exports, coming next to raw silk and soya beans, In 1930 the value of vegetable oils exported amounted to Hk. Tls. 67,984,038, being 7.6 per cent of the total export trade of China that year.

In Kiangsu Province, owing to insufficient supply of raw material, the oil-milling industry has not developed to the extent it has in some provinces. As machinery was not used until quite recently, the output of the Kiangsu mills is limited, and beyond supplying local needs very little is exported.

Oil-mills of the modern type were established in Kiangsu in 1905, when the Ta Teh (大德) mill was opened in Shanghai, Since when a number of cotton-seed mills have started operations. These mills at first enjoyed considerable prosperity, as the supply of raw material was quite abundant. Owing to the conservative attitude of Chinese farmers, the cottonseed cake produced by these mills was not largely used in China as fertilizer, but was exported to Japan, and eventually the Japanese found it much more profitable to establish oil-mills in their own country and buy cottonseed from China. From 1913 the number of these mills in Japan increased so rapidly that cottonseed was exported to that country in huge quantities, and as a result Chinese mills suffered from shortage of supplies, and many of them were forced to close down.

The number of Kiangsu oil-mills now in operation is about 740, classified in the following groups:

Bean oil	342
Cotton-ssed oil	6
Groundnut oil	62
Sesamum seed oil	50
Rapeseed-oil	2
Mills producing more than one variety of oil ..	278

All these mills are in operation only from three to six months during the year, the season varying with different groups. For cotton-seed business is most brisk in November, while July is the best month for bean and rapeseed mills. Although only in operation for a short period, upkeep expenses for the whole year have to be met, consequently, the cost of production is very high, and there is little hope for development of the industry, despite the fact that vegetable oils are among the daily necessities of the Chinese, and are also essential to a large number of industries.

Oil mills are found almost in every district in the Province, details being shown in the following table, (annual output being the average of the last three years):

	No. of Mills	No. of Workers	Total Capital	ANNUAL OUTPUT OIL. Piculs	OIL. Value	CAKE. Piculs	CAKE. Value	Total Value of Products
Shanghai	13	2,682	1,097,099	240,000	$4,620,000	638,000	$9,188,000	$13,808,000
Paoshan	2	11	6,500	200	3,600	14,000	63,000	66,600
Wusih	8	321	183,000	46,260	740,200	525,960	2,629,800	3,270,000
Wuchin	19	674	775,000	80,880	1,617,600	808,800	3,437,400	5,055,000
Tangyang	20	362	120,000	3,300	62,700	10,900	46,800	109,500
Fenghsien	6	67	3,000	10,000	180,000	61,500	1,425,000	1,605,000
Kunshan	1	24	10,000	4,590	77,850	12,453	25,292	103,124
Tsingpu	2	86	61,200	7,200	122,400	14,400	28,800	151,200

Chinshan	1	10	10,000	4,000	2,850	11,000	23,200	96,050
Sungkiang	2	124	9,000	4,775	76,225	14,950	17,735	93,960
Ihsing	1	35	40,000	3,685	77,392	40,000	160,000	237,392
Kiangyin	25	402	50,000	15,000	255,000	118,258	750,000	1,005,000
Liyang	1	28	30,000	3,000	60,000	32,000	128,000	188,000
Nanhui	6	48	12,000	3,748	56,203	31,347	138,586	194,789
Kuanyun	7	175	175,000	100,800	120,000	1,209,600	180,000	300,000
Founing	17	212	88,000	17,104	307,871	248,651	1,118,930	1,426,801
Suchien	35	305	17,500	27,000	450,000	160,000	720,000	1,170,000
Peihsien	45	312	35,000	8,000	135,100	93,990	218,255	353,355
Suining	109	802	250,000	40,500	688,500	259,200	587,000	1,275,500
Tangshan	19	111	10,000	90	1,205	1,440	2,340	3,545
Hsinghua	9	52	4,500	2,000	40,000	7,000	60,000	100,000
Tungshan	105	909	350,000	18,500	333,000	40,000	500,000	833,000
Fenghsien	133	824	105,000	4,655	69,825	29,327	130,340	200,165
Peihsien	35	392	17,500	3,500	53,000	20,200	101,000	154,000
Hsiaohsien	45	403	25,000	9,478	61,828	60,217	240,000	301,828
Nantung	3	1,210	490,000	65,500	1,506,500	400,000	1,800,000	3,306,500
Kaoshun	34	314	170,000	30,000	190,000	180,000	810,000	1,000,000
Tunghai	7	199	30,000	12,500	202,500	135,000	540,000	742,500
Kangyu	30	139	105,000	9,000	110,000	90,000	360,000	470,000
Luho	6	156	285,000	7,700	138,600	92,400	216,000	354,600
Total	746	11,389	4,573,200	783,965	$12,429,949	5,360,593	$25,645,478	$38,075,427

There is considerable variation in the organization of oil-mills, but generally there are two departments—business and technical. The business department consists of two sections, one for sales and another for accounting, while the technical department takes charge of the engine-room, crushing-room, seedcake pressing, and machine-shop. For mills which produce more than one variety of oil, the organization is correspondingly more complicated.

The total capital of the Kiangsu oil-mills amounts to $4,573,200, an average of $6,117 per mill. Most of those operating in Shanghai are equipped with machinery, and are larger than those in the interior, their total capital amounting to $1,097,000. The following table shows the percentage of oil-mills according to the size of their capital:—

Capital	Percentage
Below $1,000	30.25
$1,000-5,000	22.71
5,00-10,000	11.98
10,000-50,000	15.34
50,000-100,000	18.22
Above 100,000	01.50

Over 11,000 men are employed in the oil-mills of this Province, and of this number 2,700 are in Shanghai. No women are employed as the work requires much physical strength. Though local labor is employed to some extent, most of the workers come from districts north of the Yangtse, and have greater physical strength and endurance. With the exception of a few natives of Hupeh employed in Shanghai mills, people of other provinces are not usually engaged in this work.

Wages are paid both monthly and daily. In Shanghai workers in bean and cotton-seed mills receive from $14 to $19 per month, providing their own board and lodging. When the price of rice is above $13 per picul, an allowance of a dollar a month is given to each worker. Workers in groundnut-mills have board and lodging provided by employer, and their pay averages about $6.50 per month, the highest being $8 and the lowest, $3. A factory

supervisor is paid from $60 to $80 monthly, while mechanics and foremen are paid from $20 to 30. In Wusih a mechanic receives from $15 to $40, paid monthly even when the mill is not in operation. Grinders are paid from $12 to $20 a month, the average wage being $16. Workers who handle the pressing-machines are paid on piece-rate. For every large-sized cake 0.7 to 0.8 cent is paid, for one of medium size, 0.4 to 0.5 cent, and for a small cake, 0.2 to 0.25 cent. On an average, a presser earns about 40 cents a day.

Different machinery is used in manufacture the various oils. A cotton-seed plant of four presses, sieves, grinding-mills, ovens, iron pans, etc., capable of producing 80 piculs of oil in 24 hours, costs about $84,000. Such a plant will call for a 150 h.-p. motor to run it. Formerly, the machinery used in Kiangsu mills was mostly British, American, or German, not recently home-made machinery has appeared on the market.

Sieves, grinding-machines, and iron or wooden presses are needed in producing bean oil. Grinding machines are of two sizes, the larger being 24 feet in diameter, capable of grinding 20 piculs of beans per hour, while the smaller machine is about half this size. The prices being $1,680 and $840 respectively. A steel press with diameter of 24 inches costs about $500, and one of 13 inches diameter $420, while the price of a wooden press is about $50.

Presses used in manufacturing groundnut-oil are made of wood, costing about $60, each capable of producing from one to two piculs of oil a day. A large mill is usually equipped with 50 or 60 presses, and a small one with from 10 to 20.

RAW MATERIAL

The demand for oil being fairly constant, the most important problem in the industry is the supply of raw material. Cotton-seed, beans, groundnuts, and rapeseed are grown abundantly, but owing to the huge export of these products in recent years, the quantity remaining in the country is not sufficient for the requirements of Chinese mills. Those in Kiangsu Province are in operation for only a short period during the year, and a number of them have closed entirely owing to shortage of raw material.

The cotton-seed used in Shanghai mills comes from four principal sources. About 2,000,000 piculs are imported annually from Hankow, which is the distributing center for the products of Szechuen, Hunan, Hupeh, Honan, and Shensi, the price being about $3.20 per picul. Shaohsing, Yuyao and neighboring districts are another source of supply, sending to Shanghai about 200,000 piculs annually. Another 500,000 piculs come from Kiangyin, Wusih, and Taitsang), and 300,000 piculs from Jukao, Haimen, Tsungming and Chitung. The average price of cotton-seeds, except the Hankow variety, is about $2.50 per picul. Manchurian seed is rarely imported to Shanghai, owing to Japanese control of the market and high freight charges.

Chinese cotton-seed is of three varieties—white, black, and green. The latter contains the largest proportion of oil, while the white contains the least. The average oil content of Chinese cotton-seed is 8.5 per cent, as against 10 per cent for American seed, 13 per cent for Indian, and 16 per cent for Egyptian.

China's total annual production of cotton-seed is about 3,000,000 piculs, but in 1931 was much less on account of the floods. Approximately 1,200,000 piculs are exported to Japan annually. As the mills in this Province alone would consume 2,000,000 piculs if operated on full time, it is evident that shortage of raw material is the chief difficulty of the industry.

Many kinds of beans are produced in China, the four principal varieties being *huang tou* (黃豆), *chin yuan* (金元), *pai mei* (白眉), and *hei chi* (黑脐). *Huang tou* is the most abundant, while *chin yuan* contains the largest proportion of oil, *hei chi* being the least suitable for pressing.

Beans are grown almost in every province, Manchuria being the leading source of supply, with Honan, Shansi, Shantung, Hupeh, Hunan, Anhui, and Kiangsu ranking next in order. Formerly, beans used in the Kiangsu mills came mostly from upper Yangtse Provinces and districts along the Tientsin-Pukow Railway, in addition to the local supply. Owing to bandit disturbances in those regions, however, the output has decreased considerably in recent years, and Manchuria remains the principal source of

supply. The annual quantity of beans imported from Manchuria to Shanghai amounted to 2,000,000 piculs, the average price being about $9 per picul.

China produces about 220,000,000 piculs of groundnuts annually: the output of Shantung alone amounting to about 179 million piculs, that of Anhui and Kuangtung, over 7 million, Kuangsi, Hupeh, Kiangsu, about 4 million each, and Hupei, Shansi, Kiangsi, Hunan, and Fukien each about one million.

Tientsin, Tsingtao, Hankow and Chinwangtao are the distributing centers for groundnuts, and oil mills in this Province usually set their supplies from Tsingtao and Tungshan, at an average of about $7.50 per picul, the annual quantity consumed being about 200,000 piculs. The oil contents of groundnuts vary with weight and size. A picul of the best quality yields about 60 catties of oil, while the poorest gives only 30, the average being 50 catties.

Rapeseed is grown in Kiangsu, Anhui, Northern Shansi, Western Shantung and Southern Honan. In this Province, Wuhsien, Kunshan, Changshu and Pootung are noted for their production of rapeseed, that grown in Changshu and Pootung being the best in quality. There are three classes of rapeseed, *yu tsu* (油籽), containing 36 per cent of oil, *latze* (腊籽), containing 30 to 40 per cent, and *huangtsai-tsu* (黃菜子) containing 38 per cent. Formerly all the rapeseed grown was consumed by oil-mills, as this oil was generally used for lighting, but since the use of kerosene was introduced, rapeseed began to be exported, and now only about a million piculs are consumed in Chinese mills annually.

In addition to purchases inland, some of the cotton-seed consumed in Kiangsu oil-mills is supplied by local cotton-mills. Owing to the shortage of supply in recent years, the Kiangsu oil-mills have organized a common purchasing agency, which buys cotton seed and diatributes it among the mills in proportion to their size. Beans, rape-seed, and groundnuts are collected from farmers by cereal dealers, who in turn sell to the mills.

PRODUCTION

The following table show the output of vegetable oils and bean and seed-cake in this Province during the past three years:

OILS

	1929 Piculs	1929 Value
Cotton seed oil	593,356	$6,385,429
Rape seed oil	62,235	1,350,031
Bean oil	561,224	6,789,510
Groundnut oil	79,256	2,049,895
Sesamum oil	48,340	954,321
Total	1,343,411	17,529,196

	1930 Piculs	1930 Value
Cotton seed oil	281,315	$4,927,618
Rape seed oil	59,061	1,005,425
Bean oil	541,000	6,987,425
Groundnut oil	72,123	1,931,504
Sesamum oil	45,201	854,329
Total	998,700	15,706,301

	1931 Piculs	1931 Value
Cotton seed oil	211,999	$4,027,981
Rape seed oil	50,600	860,200
Bean oil	419,363	5,743,289
Groundnut oil	63,428	1,142,704
Sesamum oil	38,575	655,775
Total	783,965	12,429,949

Seed Cakes

	1929 Piculs	1929 Value
Cotton seed cake	2,961,780	$13,328,010
Rape seed cake	1,555,875	4,677,625
Bean cake	4,770,404	21,466,818
Sesamum cake	96,680	232,364
Groundnut cake	317,024	951,072
Total	9,701,663	40,635,889

	1930 Piculs	1930 Value
Rape seed cake	147,653	447,959
Bean cake	4,598,500	20,693,250
Sesamum cake	90,402	207,924
Groundnut cake	288,296	1,153,984
Cotton seed cake	1,406,575	6,329,875
Total	6,531,626	28,827,805

	1931 Piculs	1931 Value
Cotton seed cake	1,059,095	$4,451,979
Rape seed cake	126,900	379,500
Bean cake	3,853,036	18,303,235
Sesamum cake	77,150	179,916
Groundnut cake	253,712	1,014,848
Total	5,360,593	25,645,478

The following table shows some of the uses made of various oils and cakes:—

	Direct use	Indirect use
Cotton seed oil	Food	Soap and paint manufacturing
Bean-oil	Food, lighting, and lubricating.	Substitute for lard and cream, soap, glycerine, hardened oil, candles, water-roofing material, paints, and rubber-making.
Groundnut-oil	Food	
Rapeseed oil	Food, lighting.	
Sesamum-oil	Food, medicinal	

Cottonseed cake	Fertilizer, animal feed	Liquid paints, bean curd, soy, and cakes, etc., flavoring powder
Beancake	Fertilizer, animal feed	
Groundut-cake	Fertilizer	
Sesamum-cake	Fertilizer	

MARKETING

A considerable quantity of cottonseed oil is exported to Shasi and Ichang, but Japan, Korea and Taiwan are the only markets for cotton-seed cake, Chinese farmers not using it for fertilizing purposes. Bean oil is sold to almost all parts of China, the four provinces of Kiangsu, Chekiang, Fukien and Anhui absorbing large quantities. It is also exported to Great Britain, Japan, United States, and the Netherlands in considerable quantities, while the two first-named countries are also the principal markets for bean-cake. Groundnut-oil is mostly consumed in Amoy, Canton, Philippine Islands, and Straits Settlements, whereas ground-nut cake is mostly sold in Shanghai.

Cottonseed-oil and bean-oil are usually packed either in bamboo crates, coated with waterproof paper, or in iron drums. A large crate holding 330 catties costs about $1.40, while an iron drum with a capacity of 340 catties is sold at $4. These crates or drums are provided by purchasers, the mills doing the filling only. Groundnut-oil is packed in old kerosene tins.

Being the distributing center for vegetable oils produced in Kiangsu, Shanghai's annual imports and exports are fairly representative of the production and sales in the Province. The following tables, compiled from Customs returns show the imports and exports of oils and bean and seed cake during 1931:—

OILS (in piculs)

	Imports from Treaty Ports	Re-exports			Net Import	Direct Exports from Shanghai			Total Exports (including Re-exports)
		To the Interior	Abroad	Total		To the Interior	To Abroad	Total	
Bean Oil	1,106,944	170,507	3	170,510	936,434	5,842	1	5,843	135,353
Groundnut Oil	40,990	15,365	23,532	37,897	3,093	63,369	104,366	167,735	205,632
Cotton-Seed Oil	783	684	170	854	71	3,524	2,320	3,844	6,698
Sesamum-Seed Oil	2,455	275	742	1,017	1,438	4,222	892	5,113	6,130
Bean and Seed Cake (in piculs)									
Bean Cake	666,472	163,956	29,613	194,569	471,903	7,469	4,523	2,992	206,561
Cotton-Seed Cake	272,563	—	275,908	275,908	3,345	620	709,729	710,349	986,257
Groundnut Cake	—	—	—	—	—	179,774	47,282	227,056	227,056
Rape-Seed Cake	303,687	—	292,665	292,665	2,022	—	152,616	152,616	445,281
Sesamum-Seed Cake	4,114	—	3,801	3,810	313	—	—	—	2,801

CHAPTER XVII

HAM-CURING

THERE are three places in China famous for their hams—Tengyueh (騰越), Yunnan Province, Kinhua (金華), in Chekiang, and Jukao, in Kiangsu. Because of difficulties in transportation, Yunnan hams fetch very high prices outside that province, while the output of Kinhua hams is very limited. The product of Kiangsu Province, however, is large in quantity and reasonable in price, and the centre of the industry is Jukao, while Taihsing and Kiangtu also hold important positions in this trade.

For very many years ham-curing has been a flourishing industry in Jukao, and in 1918 there were about 30 firms engaged in this business. In 1929 a conference was called by the Shanghai Bureau of Inspection and Testing of Commercial Commodities, attended by six of the most important ham exporters in Shanghai, with a view to developing the trade. The six firms were merged into the China Ham Company (中國製腿公司), with factories in Jukao, and special privileges were granted which gave a practical monopoly in the export of ham.

The number of ham-curers in Jukao at present is 31. Conditions in Kangtu have not been so favorable, and the number of curers has decreased from 16 to seven in the last five years.

There are 31 ham factories in Jukao, 18 in Taihsing, and a few others scattered about in Kiangtu, Taihsien, and Chinkiang but of these only the factory of the China Ham Company is operated on modern line. The following are the ham-curers now operating in Kiangsu Province and their annual output:—

JUKAO

			Number of Hams	Value
China Ham Co.		...	120,000	$300,000
Kuang Feng	(廣豐)	....	60,000	150,000
Wang Yu Chang	(王裕昌)	....	25,000	62,000
Heng Yu	(恒餘)	....	25,000	62,000
Tung Tai Lai	(同泰來)	....	20,000	50,000
Hsiang Chi	(祥記)	....	20,000	50,000
Jui Sheng Ho	(瑞生和)	....	20,000	50,000
Ta Hua	(大華)	....	18,000	45,000
Pao Feng	(寶豐)	....	10,000	25,000
Jui Tai	(瑞泰)	....	10,000	25,000
Heng Chang	(恒昌)	....	8,000	20,000
Yung Lung	(永隆)	....	25,000	62,000
Yung Tai	(永泰)	....	20,000	50,000
Wan Hsing	(萬興)	....	15,000	37,500
Hsiang Mou	(祥茂)	....	10,000	25,000
Tung Chang	(同昌)	....	8,000	20,000
Cheng Chi	(正記)	....	15,000	37,500
Ho Chi	(和記)	....	15,000	37,500
Ta Feng	(大豐)	....	10,000	25,000
Yung Chang	(永昌)	....	10,000	25,000
Yu Chang Sheng	(裕昌盛)	....	10,000	25,000
Yung Ho	(永和)	....	15,000	37,500
Yuan Ta	(源大)	....	5,000	12,500
Jui Chang	(瑞昌)	....	5,000	12,500
Yung Chang	(永昌)	....	5,000	12,500
Chiu An	(久安)	....	5,000	12,500
Yung Hua	(永華)	....	10,000	25,000
Kung Mao Yung	(公茂永)	....	10,000	25,000
Wan Yuan Sheng	(萬源盛)	....	10,000	25,000
Wan You Yuan	(萬有源)	....	10,000	25,000
Wan Yuan	(萬源)	....	5,000	12,500

TAIHSING

Wan Tai	(萬泰)	....	5,000	12,500
Hsiang Mao	(祥茂)	....	15,000	37,500
Teh Feng	(德豐)	....	20,000	50,000
Kung Hsing	(公興)	....	10,000	25,000
Teh Mei	(德美)	....	10,000	25,000
Mao Sheng Ho	(茂生和)	....	20,000	50,000
Hsieh Chi	(協記)	....	12,000	30,000
Hsing Hsing	(興興)	....	12,000	30,000
Hung Liang	(宏良)	....	12,000	30,000
Cho Wu	(卓五)	....	12,000	30,000
Ma Hsieh Chi	(馬協記)	....	10,000	25,000

Yu Yuan	(裕 源)	....	10,000	25,000
Jen Tai	(仁 泰)	....	10,000	25,000
San Tai	(三 泰)	....	10,000	25,000
Yu Chi	(裕 記)	....	10,000	25,000
Ho Sheng	(和 盛)	....	10,000	25,000
Ho Sheng	(合 盛)	....	10,000	25,000
Yung Feng	(永 豐)	....	10,000	25,000
	TAIHSIEN			
Ting Fu Hsing	(丁復興)	....	5,000	12,500
Mao Sheng Ho	(茂生和)	....	5,000	12,500
	KIANGTU			
Yang Sheng Ho	(楊森和)	....	10,000	25,000
Chien Tai Heng	(乾泰恆)	....	4,000	10,000
Tai Shen Hsiang	(戴森祥)	....	4,000	10,000
Hsiang Sheng Ho	(祥盛和)	....	4,000	10,000
Tan Hsiang Yuan	(談祥源)	....	4,000	10,000
Wan Ho Yu	(万和鈺)	....	20,00	5,000
Chien Feng Tai	(乾豐泰)	....	1,000	2,500
	CHINKIANG			
Yung Tai	(永 泰)	....	15,000	37,500

The factory of the China Ham Company is established in Jukao at Pu Chi Chiao (普濟橋), outside the North Gate, covering an area of about a dozen *mou*. There are seven separate buildings, offices, slaughter-house, process-house, by-product house, and three large pig-pens. The slaughter-house is supplied with hot and cold water, and there are six large concrete tubs for scalding carcases to remove hairs. Working at the rate of three pigs per hour per man, and with six workers at each tub, about 800 can be disposed of in an 8-hour day. The scoured carcases are then hung on the four sides of the chamber waiting inspection by veterinary experts. Adjoining the slaughter-house is a water-tower, which supplies all sections of the factory. watertower, which supplies all sections of the factory. After the carcases have been inspected and passed they are taken to the by-products house, where the viscera are removed and prepared. Fat, intestines, and bristles are the most important by-products, and waste matter is conveyed to a special quarter and later carried away to make fertiliser. The fat is mostly shipped abroad.

The process-house is situated in the centre of the factory, and is divided into three sections, with a cutting-room in the centre and curing-rooms on each side. The carcases having been again inspected and stamped after being dressed, are sent to the cutting-room, where they are divided into parts to be salted and cured in the adjoining rooms. The three pig-pens are separated into sections by movable wooden bars, and can accommodate about 1,300 pigs at one time.

Ham-curers buy both slaughtered and live *mao* pigs (毛 猪), weighing about 100 catties per head, and before purchase is effected the animals are inspected to see they are free from disease. Pigs are raised by all the farmers in the district. Some specialise in sucking pigs, which when a month old are sold through the "small pig" *hong* for a commission of 8 coppers per head. Other farmers buy these young pigs and raise them until they weigh about 100 catties, usually in six months' time, and then sell them to either ham-curers or to those who keep pigs as producers of manure. Pigs raised in Jukao are also exported to Shanghai, Hangchow, and Ningpo to the number of about 300,000 annually, while the curers in Jukao take about 220,000 animals every year. Slaughtered pigs are sold at about $20 per 100 catties, and *mao* pigs at $17.

After being dressed, a 100 catty carcase weighs only about 70 catties, from which are obtained two hams of seven or eight catties each, three catties of lard, the fore legs and body being used for salted pork, sold for about $24, while the lard sells at $29, and the viscera for $1.30 per set. The average cost of hams is $3.

The numerous by-products sold by ham-curers include salted pork, salted pig's head, *chia hsiang* pork (家鄉肉), fat, bones, etc. Most of these by-products are sold fresh for edible purposes, while fat and bristles are exported.

Investigations show that the ouptut of hams for 1931 was as follows: Jukao, 500,000; Taihsing, 100,000; Kiangtu, 30,000; other places, 250,000; total 880,000. Owing to the higher prices paid for pigs last year, and reduced buying power among consumers, the production was unusually small, for in a good year the output amounts to 1,500,000 hams.

HOME AND FOREIGN MARKETS

Kiangsu hams are sold in local markets and also exported. The most important home markets are Shanghai, Hankow, Tientsin, Kuangtung and the Three Eastern Provinces. The largest foreign market is the Philippine Islands, with Hongkong, Singapore, Kuala Lumpur, Siam, and Burma ranking next in importance. Salted and dried pork is sold mainly in Kiangsu Province and at Kashing and Hangchow, in Chekiang.

Of the Jukao curers the China Ham Company, Kuanfeng, Tung Ho Tai, and Wang Yu Chang, each have their own sales offices in Shanghai. Curers who do not have their own sales departments dispose of their products through dealers working on a commission basis. When the latter need supplies, or when curers have stocks for sale they settle terms by correspondence and the goods are forwarded. Consignments are paid for either in full on delivery, by instalments, of when re-sold, as may be agreed upon beforehand. The sales offices of Jukao curers or their agents in Shanghai receive orders and canvass among dealers from Tientsin, Hankow, Kuangtung, the Three Eastern Provinces, the Philippines and Singapore. When deal is concluded, half the purchase price is paid down and the balance on delivery. Exception to this practice is not infrequent when the buyer is known to the seller, in which case the price is paid by instalments arranged in the most convenient way, with 2 per cent commission payable in advance. Other preserved and salted pork is sold through bacon dealers in Shanghai, except to buyers in places along the Nanking-Shanghai and Shanghai-Hangchow-Ningpo Railways. All incidental expenses and taxes are borne by the seller, who retains title to the goods until the money due is paid.

Jukao hams are shipped to Shanghai either via Hsin Sheng Kang (新陞港) near Jukao, or Tien Sheng Kang (天生港) in Nantung by sailing boats, and from these points are transported by steamer to Shanghai. Freight for 100 catties is 30 cents from Jukao to Hsin Sheng Kang, and

32 cents to Tien Sheng Kang, while steamer freight is 2½ cents per ham, and $50 per picul of preserved and salted pork, this being the rate charged by the Ta Tah and Ta Tung Steamship Companies. Kiangtu hams are shipped direct to Shanghai by steamer, and those destined for places north of the Yangtse are shipped to Chinkiang, and then transferred to rail.

Hams shipped to Shanghai are packed in gunny-bags, 50 in each weighing about 300 catties, while those for export to the Philippines are each wrapped separately and then packed in wooden boxes. Hams for home markets other than Shanghai are also packed individually and then wrapped in bamboo baskets.

CHAPTER XVIII

EGG INDUSTRY

POULTRY-FARMING has been an important subsidiary industry among Chinese farmers for many years. The fact that eggs are usually more expensive than other farm products induces peasants to sell eggs in exchange for daily necessities. China formerly produced more eggs than any other country in the world, and the low prices brought many buyers from abroad. In the beginning, however, only fresh, salt and preserved eggs were exported, owing to ignorance of other methods of handling eggs and egg products.

Chinese eggs were first exported to Japan, which country made large profits by re-exporting shipments to Europe after effecting improved methods of packing. In 1901 German merchants introduced new methods into this country and many egg-product plants were established in the interior. Albumen was the only product handled at first, but later, egg yolk became the chief article of production. During their first decade of operation these enterprises enjoyed great prosperity, which naturally encouraged the establishment of many new concerns, of which the chief was the International Export Co., British enterprise, operating plants in Hankow, Tientsin, and Nanking and preparing frozen eggs in the American style. This company maintained no less than 150 egg-purchasing offices in various cities, and turned out an average of about 2,000

barrels per day, each containing from 800 to 850 eggs. Having fairly large capital, and being encouraged by the British Government and supported financially by the bank, this concern was a very profitable undertaking between 1912 and 1919, but then encountered strong conpetition from a German company established in Tientsin, Tsingtao, and Hankow.

The manufacture of egg products by Chinese was started about 1909, when a merchant named Yuan Wen-chung (阮文中), organized five large factories—the Yuan Feng (元豐) in Changteh (彰德), Hsuchang (許昌) and Chumatien (駐馬店), Honan Province, Sangyuan (桑園), Shantung Province, and Suchow (宿州), Anhui Province. In 1912 the first egg factory in Kiangsu, the Hung Yu Chang (宏裕昌) came into existence. This concern was capitalized at about $200,000 and operated several plants at Tsingkiang and Tungshan in Kiangsu, and Tsining (濟甯), in Shantung. The number of factories further increased in subsequent years until in 1919 there were more than 100 scattered about in various parts of the country.

The Japanese first entered this industry during the European War, when the German merchants were compelled to suspend operations. The demand for eggs increased, and prices rose as a result of the suspension of many factories in belligerent countries. After the war, however, with the resumption of operations in European countries, Chinese products were in less demand, and though no formal ban was placed upon the import of such goods, propaganda was organised in almost every country against Chinese eggs, which were alleged to be unwholesome. For instance, in 1919, the American Government

introduced a law forbidding the import of Chinese eggs on the ground that they were kept on zinc plates during the processes of manufacture, and consequetly were poisonous. A similar regulation was proclaimed in Great Britain against Chinese moist eggs containing more than 1.5 per cent of borax. As a result of these restrictions, the markets abroad for Chinese eggs became limited, and prices dropped rapidly, while the accumulation of stocks in China showed a steady daily increase. In 1920 a very large number of factories were closed, while surviving ones commence to adopt improved methods. Steel plates were used in place of zinc vessels, the borax content in moist eggs was reduced to 1.5 per cent in compliance with British requirements, and glycerine and salt as preservatives. High tariffs in practically every Western country, the remarkable growth of poultry-farming in countries such as Great Britain, Japan, Russia, the United States, etc. and the strong prejudice created against Chinese eggs, coupled with difficulties of transportation at home, all combined to check the development of the Chinese trade, and the situation came to a crisis in 1923, when in the whole of China, there were only four or five factories able to continue operations. Nevertheless, since 1925 a gradual recovery has been taking place, and in spite of the numerous difficulties which the industry has had to encounter, eggs and egg products stood third among China's staple exports during the last three years.

Of the 90 factories now in operation in China—excluding manufacturers of preserved eggs—nine are owned by foreigners, while among the 71 Chinese concerns, 11 are established in Kiangsu, as follows:—

Factory	Location	Capital.	No. of Workers.	Output.	Annual Production. Quantity.	Value.
Mao Chang (茂昌)	Shanghai	$2,000,000	400	Fresh, frozen, and moist eggs	39,400 boxes (fresh eggs), 9,800 boxes (frozen eggs), and 134 tons (moist eggs)	$9,814,100
Central Cold Storage (中央冷藏廠)	"	300,000		Fresh, and frozen eggs	5,000 tons (frozen eggs)	400,000
Hua Hsing Tai Chi (華興泰記)	Hsinghua	10,000		——	——	——
Han Hsing Chiang (漢興祥)	"	10,000		——	——	——
Heng Ho (恆和)	"	——		——	——	——
Hung Chang (宏裕)、Hsing Chen (興成)、Ho Hsing (和興)	Suchien	6,000	55	Salt yolk and albumen	——	65,000
Ting Sheng (鼎盛)	Tungshan	20,000	100	Dried yolk, yolk powder, Moist salt yolk, "honey" yolk (蜜黃)	1,500 pls. (dried yolk), 3,000 pls. (yolk powder) 2,700 pls. (moist salt yolk), 800 pls. (honey yolk)	650,000
Hung Yu Chang Sin Chi (宏裕昌新記)	"	200,000	300	——	——	——
Chien Yuan (乾源)	Kiangtu	——	—	Dried albumen and moist yolk	——	——

In addition to the above factories, which handle eggs and egg products (moist, dried, frozen and fresh) there are several others which prepare *pi tan* (皮蛋) or preserved eggs. Wuchin and Huaian are the two cities where these factories are concentrated, details being as follows:

Factory.	Location.	Capital.	Annual Output. Quantity	Value
Huang Chu Chang (黃矩昌)	Wuchin	$ 500	700,000pcs.	$18,900
Huang Tung Yi Chang (黃同義昌)	,,	500	700,000	18,900
Fang Hsieh Sheng Yu (方協盛餘)	,,	500	700,000	18,900
Fang Tseng Ho (方增和)	,,	500	700,000	18,900
Hsin Yu Chang (新裕昌)	Chinkiang	8,000	2,000,000	60,000
Hsu Hsiang Hsing (徐祥興)	Huaian	5,000	500,000	13,000
Sun Fu Hsing (孫福興)	,,	2,500	250,000	6,500
Chiang Yu Tai (蔣裕泰)	,,	2,500	250,000	6,500

SOURCES OF SUPPLY

An enormous number of eggs are consumed by these factories, and in addition to hen eggs, duck and goose eggs are used for preserving with distillers' grain (pickled eggs). In preparing preserved and salt eggs, duck eggs are always preferred.

Eggs are abundant in practically every province, but the fact that local consumption is proportionally large makes it impossible for many to have any surplus for export. Szechuen, Sikang, Yunnan, Kuangsi and Kuichow are provinces with large supplies of eggs which are sold locally at very low prices owing to the comparatively small population, but difficulties of transportation makes it almost impossible to reach the ports. With regard to Shansi, Honan and Heilungkiang, only dried products can be sent out, fresh eggs being invariably spoiled during the long period of rail and water transportation. Thus, the only districts able to export eggs in large quantities are those along the Yangtse and Yellow Rivers traversed by the

Tientsin-Pukow and Peiping-Hankow railways, including Kiangsu, Chekiang, Anhui, Kiangsi, Hupeh, Shantung and Hopei, with Shanghai, Tsingtao, Tienstin and Hankow as the four principal collecting and distributing centres

Eggs used in factories in Kiangsu are obtained mainly from districts in that province or neighboring ones, as follows:

1. Northern Anhui and the Southern Section of the Tientsin-Pukow Railway: Tungshan, Suchow (宿州), Kuchen (固鎮), Pengpu (蚌埠), Yingchow (潁州), Chengyangkuan (正陽關), Shouchow (壽州), Mingkuang (明光), Pochow (亳州), Luchow (廬州), Puchen (浦鎮), Hohsien (和縣) and Hsiakuan (下關).

2. Yangtse Cities: Hankow, Kiukiang, Tatung (大通), Anking (安慶) and Wuhu.

3. Chekiang Cities: Chüchow (衢州), Lanchi (蘭谿), Kinhua (金華), Chuchi (諸暨), Hsiaoshan (蕭山), Hangchow (杭州), Tsungteh (崇德), Kashing (嘉興) and Pinghu (平湖).

4. Coastal Districts: Wenchow (溫州), Haimen (海門), Chapu (乍浦), Chousan (舟山), Tsomen (楚門), Yotsing (樂清), Tsungming (崇明), and Pootung (浦東).

5. Districts North of the Yangtse: Kuanyun, Huaiyin, Paoying, Yencheng, Taihsien, Kiangtu, Kaoyu, Tungtai, Hsitai (西台), Hsinghua, Jukao and Nantung.

Very seldom do farmers take their eggs to town for sale, and it is therefore necessary for factories to maintain collecting agents to call at the different villages. Small factories, which do not have enough capital to operate regular collecting offices, usually get their supply through local buyers.

The procedure of egg collection, however, varies greatly in different localities, and the following reports from investigators are interesting as showing the methods followed:—

Districts North of the Yangtse—Eggs are generally collected indirectly through local buying firms with whom a certain amount of money is first deposited. The firm then advances this money to peddlers, who go to the villagers or small shops to collect eggs, prices ranging from six to seven coppers each (rising to about eight coppers at the year-end). When delivered to agents of the factories, however, eggs are not counted but weighed, the unit being 110 pounds. The market price for 110 pounds of eggs is about $22, which with miscellaneous expenses such as brokerage, duty, freight, etc., makes more than $24 per 100 pounds.

Yangtse Districts—Eggs in this region are usually bought by numbers, but the fact that the size varies considerably has induced collectors to use pounds as a more accurate basis for calculation. In most cases, factories hand over the entire work of collection to local firms, though some large concerns maintain their own purchasing agents in order to avoid possible fraud on the part of brokers.

Northern Anhui—Collection in this area is very seldom handled by local firms, since most factories purchase stocks through their own representatives, who employ a number of men to go round the country to collect for them. Prices are quoted by number, 1,000 pieces being worth at the cheapest rate 2,000 coppers. In silver currency, eggs from this region fetch only a little more than $10 per 100 pounds, excluding collecting expenses, freight, etc.

Collectors in this territory have two great difficulties to overcome—lack of cash and bamboo, the latter being indispensable for making containers. The fact that a sufficient amount of cash cannot be obtained from any district in Northern Anhui necessitates the transportation of coppers from Pengpu, which means considerable trouble, risk, and expense. To bring bamboo crates from a distance also involves not only extremely heavy expense for freight but great waste in breakage during the long journey

by water and land. Thus, although eggs are extremely cheap, yet by the time they arrive at Shanghai prices are no lower than those from other localities.

Coastal Districts—Eggs from these places are mostly small and sold by number. Except for a small proportion shipped to Shanghai to be retailed by provision stores, the greater part is exported to Manila. Very small numbers are bought by factories, as they are good only for frozen varieties.

The Nanking-Shanghai Railway Zone and Chekiang Cities—Many factories maintain purchasing offices in various districts in this area, but not infrequently villagers carry their stocks to Shanghai and dispose of them direct to factories. In practically all cases eggs are packed in bamboo crates, containing from 500 to 1,000 according to the size of the containers and the eggs. Insufficient means of protection against breakage and extremely slow transportation often cause unnecessary loss; in fact, it is not unusual that 40 per cent of the eggs broken or decay in course of transit.

PROCESS OF PREPARATION

All varieties of preserved eggs and egg products require elaborate preparation. In all cases, eggs are first weighed, sorted, and telescoped, the last process consisting of holding the eggs again the rays of a lamp. Bad eggs are immediately rejected, while the good ones may be either sent into the plants for preparation or are packed in bran in wooden boxes, containing at least 360 eggs, ready to be exported. During transportation eggs are kept at a temperature not higher than 35° F.

PRESERVED EGGS

To make the preserving mixture water and tea-leaves are first boiled in a pan. The leaves are then removed and bean-pod ash, lime, new tea-leaves, salt, and alkali are added to the solution. Duck eggs are coated with this paste and packed in rice husks.

SALTED EGGS

The method employed is simple, consisting of coating duck eggs with a paste containing a mixture of salt and ash or salt and loess.

PICKLED EGGS

Duck or goose eggs are first cleaned with water, and after being dried are transferred to an earthern vessel, containing filled alternate layers of salt and distillers' bran. The eggs are placed on the last second layer, and at the top is a thick layer of salt covered with a quantity of rice-wine. The vessel is then carefully sealed, and the pickling process takes about 40 days in spring and autumn, 20 days in summer, and 60 days in winter.

DISTRIBUTION

Fresh eggs are exported from Kiangsu to Great Britain, United States, Japan, Hongkong, Straits Settlements and Germany, besides being consumed locally and in neighboring provinces. Pickled eggs are not exported, but are in good demand throughout the country. Though the preserved and salted varieties do not appeal to foreigners, they find a large market among Chinese living abroad, especially in the Straits Settlements. The Chinese do not use very much egg-powder, or dried and moist egg products, but there is a big demand from Great Britain and the United States for these lines.

Chinese eggs are the cheapest on foreign markets, usually selling at one-half or two-thirds the price of foreign products. The fact that there is no cooperation among Chinese producers in disposing of their goods gives foreign exporters in Shanghai (through whom this trade passes) a chance to fix prices arbitrarily in their favour.

According to Customs reports, egg exports from Nanking, Chinkiang, Soochow and Shanghai during the last five years are as follows: (Value in Haikwan Taels, quantity

in piculs except in case of preserved and salted eggs which are handled in 1,000 pieces as unit, the figures for 1931 include export from Shanghai only):

	1927	1928	1929	1930	1931
Dried albumen:					
Quantity	14,055	17,499	23,661	24,325	23,745
Value	1,559,443	1,890,704	2,260,840	1,503,867	2,137,050
Frozen albumen:					
Quantity	50,819	50,923	53,921	61,543	33,737
Value	916,691	1,054,520	1,055,218	1,276,197	674,740
Dried yolk:					
Quantity	7,929	13,351	16,819	11,139	22,194
Value	623,618	1,091,666	1,457,520	965,129	1,553,580
Frozen & moist yolk:					
Quantity	105,837	121,575	122,814	708,082	97,790
Value	3,064,669	3,673,890	5,291,272	4,691,988	12,955,800
Dried egg whole:					
Quantity	12,233	21,440	20,483	15,606	7,166
Value	1,027,988	1,929,600	1,755,282	1,232,022	609,113
Frozen and moist egg whole:					
Quantity	256,408	389,183	396,516	405,740	273,913
Value	6,907,871	20,302,894	2,953,689	2,177,144	5,478,260
Preserved and salted eggs:					
Quantity	16,190	13,214	13,085	14,319	13,923
Value	250,640	232,674	232,645	232,674	348,075

Chinese manufacturers of egg products have not only a large number of competitors abroad, bus also many foreign rivals operating in China. The total capital of five of these concerns amounts to $5,000,000, the aggregate capacity being 400,000 piculs annually. Though Chinese factories in Kiangsu are more numerous, yet they have only about $3,000,000 in capital, while the annual capacity does not exceed 200,000 tons. Hence, in reading the Customs figures it must be remembered that a very large part of the export business is handled by foreign firms.

Foreign manufacturers in Kiangsu are further strengthened by the financial support given them by their banks. This fact, together with better machinery and higher technical knowledge on the part of operators, enables them to outbid Chinese producers

Chinese eggs are appreciated abroad primarily for their cheapness, but gradually, this advantage is being lost, as many countries have been able to produce cheap eggs through scientific rearing of poultry and the development of modern poultry-farmers on a very large scale.

Great Britain has been for a number of years the largest buyer of Chinese frozen and moist eggs, but that market is now congested with Netherlands and Russian products, which have rapidly displaced Chinese supplies.

Chinese trade with the United States would have been much more highly developed had it not been checked by the repeated new restrictions and rulings which have been brought into operation during the past 16 years. First of all, any product which showed any trace of zinc content was prohibited, and when Chinese producers changed their methods of manufacturing to comply with this regulation, the U.S. Government's next step to restrict imports from China was to increase substantially the import duties. This not having the desired effect, the U.S. Government in 1930 put a limit on the free fatty acid content in egg yolk. The following table shows the increasing American tariff on Chinese eggs since 1913:—

	Frozen Eggs. (cents per dozen)	Dried Eggs, Whole (cents per dozen)	Moist & Frozen Eggs (cents per dozen)
1913	Free	6	2
1921	3	—	—
1922	8	18	6
1930	10	—	11
1931	—	27	—

Formerly, fresh eggs from China were greatly appreciated in Japan, but in recent years, a rapid fall in demand has been seen due to the increasing output in Japan as a result of Government encouragement of the poultry industry, and to the rising price of Chinese eggs in consequence of an increased import tariff.

The following are among the most important Chinese exporters:

Capital.		Foods Handled.	Exporting to
Great China	$ 10,000	Egg products.	Great Britain and U.S.A.
Ta Feng (大豐)	10,000	Fresh and preserved eggs.	Straits Settlements.
Li Ta Cheng (立大成)	10,000	Fresh and preserved eggs.	U.S.A., Straits Settlements, Philippine Islands, Annam and Siam
Chun Feng (駿豐)	10,000	Preserved eggs.	Straits Settlements.
Fan Kang Chi (范剛記)	5,000	Preserved eggs.	Manila and Hongkong.
Tung Feng Tai (同豐泰)	$ 4,000	Preserved eggs.	Germany, France and Manila.
Yuan Shun Hsiang Hsin Chi (源順祥辛記)	6,000	Preserved eggs.	Hongkong and Dairen.
Chang Hung Tai (張宏泰)	5,000	Preserved, salted and fresh eggs.	Hongkong and Manila.
Yung Feng (永豐)	$ 20,000	Chick and duck eggs.	Manila.
I Feng Ta Hsin Chi (怡豐泰信記)	20,000	Chick and duck eggs.	Manila.
I Ho (益和)	50,000	Chick and duck eggs.	Manila.
Heng Hsin (恒信)	30,000	Preserved eggs.	U.S.A. and Canada.
Cheng Hsin (誠信)	30,000	Preserved and salted eggs.	U.S.A. and Honolulu.
Chang Hua (昌華)	50,000	Preserved and salted eggs.	Honolulu.
Hsieh Yung Chang (協永昌)	50,000	Preserved and fresh eggs.	U.S.A. and Europe.
Chen Tai Chang (晨泰祥)	3,000	Preserved eggs.	Hongkong and Singapore.
Hsieh Ho Yung (協和永)	$ 10,000	Preserved eggs.	Straits Settlements.
Kuang Mao Hsiang (廣茂祥)	$ 10,000	Preserved eggs.	U.S.A. and Honolulu.
Kuang Hsin Lung (廣信隆)	10,000	Preserved eggs.	Singapore.
Hsieh Hsiang Kung (協祥公)	$ 2,000	Preserved and fresh eggs.	Singapore, Penang and Hongkong.

Tung Hsin Tai (同新泰)	2,000	Preserved and fresh eggs.	Singapore, Penang, and Hongkong.
Jui Shun Kung (瑞順公)	$ 10,000	Preserved eggs.	Singapore, Hongkong and Penang.
Tung Ho Chang (同和昌)	10,000	Preserved and fresh eggs.	Manila and Hongkong.
Yung Yu Hsiang (永裕祥)	10,000	Preserved and fresh eggs.	Manila and Hongkong.
Tung Hsing Yuan Cheng Chi (東興源成記)	₹ 5,000	Preserved eggs.	Straits Settlements and Hongkong.
Kuang I Chang (廣怡昌)	$ 5,000	Preserved eggs.	Hongkong.
Kuang Yuan Sheng (廣元生)	10,000	Fresh, preserved, and pickled eggs and all kinds of egg products.	Hongkong and Manila
Nan Ho Shun (南和順)	₹ 3,000	Fresh eggs and all kinds of egg products.	Manila, Japan and Hongkong.
I An (益安)	$ 10,000	Preserved, fresh and salted eggs.	Hongkong, Manila and Singapore.
Chu Teh Tai (聚德泰)	10,000	Preserved, fresh and salted eggs.	Manila.
Shen Sheng Tai (申生泰)	10,000	Preserved, fresh and salted eggs.	Manila and Hongkong.
Ching Yu Kung (慶餘公)	₹ 5,000	Preserved eggs.	Straits Settlements.
Fu Tien Shen (福天申)	2,000	Preserved and fresh eggs.	Straits Settlements and Europe.
I Hua (益華)	20,000	Preserved and fresh eggs.	Manila and Hongkong.
Yu Hsing Hsiang (裕興祥)	2,000	Preserved and fresh eggs.	Manila and Hongkong.
Hsin Chang (新record)	2,000	Dried albumen, dried and moist yolk.	Europe and America.

CHAPTER XIX

CASINGS

SHEEP and goat intestines were used for making bow-strings in ancient times, but after firearms were introduced into China there was no market for these products, while fresh pig and cow intestines were used only as food. It was not until a foreign resident in Peiping preserved and exported some animal intestines that their preparation for market became an established industry in China.

Being the chief port through which intestines are exported, Shanghai is the centre of this industry. In the beginning this business was done on a very small scale, with a capital of a few hundred dollars and only two or three men employed in the work of preparation, but later business became more flourishing and better equipment followed larger trade. According to Customs returns the export of animal intestines in 1917 was valued at Hk. Tls. 169,534 only, while in 1920 the figure had increased to Hk. Tls. 370,987, with another stride seen in 1921 and again in 1924, in the former year the trade being valued at Hk. Tls. 420,352 and in the latter Hk. Tls. 680,360. In subsequent years, owing to restrictions imposed by foreign governments on the import of these products on the ground that they were prepared under unhygienic conditions, a heavy fall was observed in exports from Shanghai. After the establishment in 1927 a testing office by the Bureau of Social Affairs in the Municipality of Greater Shanghai there was a revival of trade, though not to the degree of prosperity enjoyed some years previously. The work of testing and inspection has been since taken over by the Bureau of Inspection and Testing Commercial Commodities of the Ministry of Industry, and a further development of the trade may be anticipated now that earlier objections have been met.

SHANGHAI FACTORIES

There are eleven casing factories operating in Shanghai, five financed and managed by foreigners, two under Chinese management with foreign capital, and four solely under Chinese management. Details of capital, location, and output are as follows:—

Chinese Enterprises.

	Capital	Operatives	Output	Location
Hsin Ta (信大)	$ 4,000	40	$ 65,000	Kashing Road
Yuan Yuan Hsin Chi (源源新記)	3,000	10	59,000	Medhurst Road
Shanghai (上海)	5,000	15	₹ 130,000	Wongkiatseh (王家宅)
Chung Hua (中華)	3,000	8	$ 11,100	Chepel
Yü Hsing (餘興)	—	7	65,000	Myburgh Road
Ta Hsing (大興)	—	9	—	Route Conty

Foreign Enterprises

	Nationality	Location
An Lee (安利)	British	Lukiatsuikok, Pootung. (陸家嘴角)
Ko Lee (格利)	British	
Yu Yü (有餘)	French	Kiukiang Road
Ta Hsing (大興)	French	Route Conty
Hua Fu (華福)	German	Fengtien Road, Peking Road.

RAW MATERIALS

Three kinds of intestines are handled on the market—pig, cow, and sheep and goat, the first representing the largest proportion of those prepared in Shanghai. Fresh intestines come mainly from local slaughterhouses, while the salted variety come principally from outside districts. Three-fourths of the intestines from 2,500 pigs slaughtered in Shanghai daily go to casing factories, but large quantities of salted intestines are also bought by local factories from the following districts:—

Kiangsu—Jukao, Taihsing, Nanking, Chinkiang, Kiangyin, Wuhsien.

Chekiang—Wenchow (溫州), Shaohsing (紹興), Hangchow, Lanchi (蘭谿), Ningpo.

Anhui—Anking (安慶), Wuhu. (蕪湖), Pengpu (蚌埠) Hofei (合肥).

Kiangsi—Kiukiang (九江).

Szechuen—Chungking (重慶).

The price of fresh intestines is 25 cents per set (including both large and small intestines), while the salted are sold at about 15 cents by dealers.

METHOD OF PREPARATION

The variety of animal intestines necessitates different methods of preparation. Pig intestines are left to soak in water for 24 hours, then rinsed several times, and again left in water for another day, when they turn milky or pink in colour. Three pieces are then fastened together, making about 13½ yards in length, and sprinkled with salt. Next day they are pressed to remove all remaining water, so that they may be packed without danger of spoiling. The preparation of salted pig intestines (*mao chu chang* 毛猪腸) is similar, but the salt used is more coarse and darker in colour. When the price of salt is high alum is used instead, but the intestines turn to dark yellow and have to be re-prepared in Shanghai.

The small intestines of buffalo and oxen are soaked in water for 24 hours before the fat and other foreign matter are taken off, when they are again put into water overnight. After being scraped and washed again they are blown up so that any breakage can be easily detected and discarded, leaving only perfect casings to be dried in the sun before being packed. Sheep and goat intestines are salted in exactly the same way as pig intestines, but while a definite diameter is fixed for the latter, for sheep and goat intestines there is no such standard requirement.

Fresh intestines are packed in wooden barrels the insides of which are coated with wax and lined with clean cloth. Usually each barrel contains 2,500 bundles, but sometimes only 2,000 or 1,000. Each layer is sprinkled with a moderate quantity of refined salt, and the contents pressed by machine before concentrated brine solution is poured in and the cask sealed. Salted pig intestines shipped to Shanghai are packed either in barrels, baskets, or reed sacks, and after being re-prepared are packed in the same way as fresh intestines. Owing to difficulty in storing, cow intestines are packed in air-tight tin-plate boxes immediately after being dried in the sun. It is necessary to lay them flat in the boxes, which contain 160 bundles of 10 pieces, each 20 meters long.

MARKETING AND TRANSACTIONS

Animal intestines are shipped abroad through exporting firms, and there is no direct contact between producers in China and consumers oversea. According to latest investigations there are 40 exporting firms, 33 foreign. Large shipments to Great Britain, the United States, Germany, France, and Japan are usually handled by foreign firms, while small consignments of dry pig and cow intestines to Hongkong, Manila, etc. are exported by Chinese merchants.

Orders from abroad are usually received by cable, the prices which buyers are willing to pay being quoted. On receiving these instructions exporters in Shanghai place their orders with local factories, paying in advance a certain proportion of the total sum. Goods are delivered in from one to three months. After the quantity ordered has been prepared by the factory, eight to twelve pieces are taken from every barrel as samples and submitted with quotations to exporters for approval. If everything is in order the goods are delivered to godown and bills are paid accordingly. Freight, insurance and Customs declarations are settled by exporters.

Between the export and the casing factory stands the compradore of the former, through whom business is done on the basis of one per cent commission from the factory, while the exporter makes his profit on the difference between the price paid to the factory and that received from clients abroad.

Prices are based on the diameter of the casings, the larger sizes being lower in price. Intestines bought and sold in Shanghai are graded as follows:—

	Diameter (Millimeter)
No. 1	24–26
No. 2	26–28
No. 3	29–30
No. 4	31–32
No. 5	33–34
No. 6	35–36
No. 7	37 & over

The following are approximate prices ruling last winter on the Shanghai market, in sets 13½ yards in length:—

Diameter (Millimetre)	Price (Cents)
26 and below	50
20–35	14
36 and above	13

Prices are based on the diameter of the casings, the larger sizes being lower is price. Intestines bought and sold in Shanghai are graded as follows:—

Intestines are chiefly used abroad as sausage casings, the largest proportion going to the United States, with Germany, France, and the Netherlands taking smaller shares, and with Japan and Italy also among the large consumers. In 1928 artificial casings were made in the United States, and although not so palatable as intestines, there has been a decreased export of the Chinese animal product to that country since the artificial article came on the American market.

As the preparation of intestines is exclusively for export trade, the figures appearing in the Customs returns may be taken to represent the value of the business. Prior to 1924 intestines were not classified in the Customs reports, and figures for Nanking, Chekiang, Soochow were not available, so that the following table gives only aggregate shipments from 1922 to 1924:—

	Sheep & Goat (Hk. Tls.)	Pig (Hk. Tls.)	Others (Hk. Tls.)	Total (Hk. Tls.)
1922	——	——	——	439,052
1923	——	——	——	665,311
1924	——	——	——	724,632
1925	17,335	581,561	——	598,896
1926	37,655	204,465	578	542,695
1927	16,606	830,208	2,621	849,435
1928	1,169	296,657	8,126	306,052
1929	126	227,334	11,987	239,447
1930	10,693	433,779	13,023	457,495
1931	10,666	505,649	14,945	531,460

TESTING AND INSPECTION

In selling fresh intestines Shanghai butchers have to supply a certificate signed by a veterinary surgeon stating the name of the butchery, the quantity of intestines sold and records of tests made before and after slaughter. Before shipment of the goods this certificate is presented at the Bureau of Inspection and Testing Commercial Commodities for inspection. Salted intestines arriving from outports are examined by officers specially appointed for the purpose, or by the Bureau of Public Safety, and experts are frequently sent to producing districts to ascertain whether there is any cattle disease prevalent, and to take all necessary preventative methods.

As the hygienic conditions of a factory have a direct bearing on public health, the Bureau of Health of the Shanghai Municipality has promulgated regulations governing the operation of casings factories and any establishment which does not conform to these regulations is forced to suspend business. It is also provided that workers in such factories have to pass a medical examination, so that no person suffering from contagious disease can remain at work. Before final packing, animal intestines are again examined in order to eliminate any unwholesome or unsatisfactory products, and size and length are details which also come in for attention by these examiners.

CHAPTER XX

BISCUITS, CONFECTIONERY, AND CANNED-GOODS

THE ART of food-preservation in China dates back 3,000 years, when cooked meats and vegetables were preserved in sealed earthenware jars. This method, though primitive and far from air-tight, was handed down from generation to generation and practised until toward the closing years of the Tsing Dynasty, when foreign canned goods were imported. The system of preserving foods in air-tight tins at once attracted the attention of Chinese manufacturers who, seeing the enormous quantity of these goods imported annually from foreign countries, began to start canning factories of their own. Unfortunately, owing to lack of experience and limited capital, these pioneer Chinese enterprises (the majority of which were established at Hongkong), were compelled to close down after a short period of operation.

The first canning factory in Kiangsu Province was that of the Tai Foong Company (泰豐公司), which in 1906 established itself at Siao Sha Doo(小沙渡), on the outskirts of Shanghai. In the same year another concern, known as the I Ho Canned Goods Company (頤和罐頭公司), was established in Wuchin. In later years quite a number of factories, engaged either in manufacturing biscuits, confectionery, or canned goods, came into operation in Shanghai. The most prominent of these was the Ma Yu Shan Company (馬玉山公司), which had its head office in Hongkong, but closed down owing to bad business,

the Kuan Sun Yuan (冠生園) and the Tai Kong Company (泰康公司), which originally had its head office in Tsinan (濟南), Shantung Province, but later transferred to Shanghai.

PRESENT CONITIONS

Other cities in Kiangsu such as Wuhsien, famous for its confectionery, and Kiangtu, where pickled vegetables are prepared, are also well-known for their canned products, but still practice primitive methods of manufacturing, and their output is limited to meeting the requirements of local consumption. The following table gives details of the confectionery and canned goods business in five principal cities of the Province:

	No. of Factories	Capital	Annual Output	Principal Products
Shanghai	37	$878,800	$3,460,800	Biscuit, confectionery, & all kinds of canned goods.
Wuhsien	—	—	560,000	Confectionery and sweetmeats.
Kiangtu	—	—	100,000	Pickled vegetables
Taitsang	1	5,000	10,000	Minced pork
Wuchin	1	10,000	—	Confectionery

Shanghai is the center of the canned goods industry in Kiangsu Province, and nearly half the total capital invested in this industry throughout the whole country is to be found in Shanghai. Of the 37 factories in that city five are capitalized at over $100,000, seven at from $50,000 to $100,000, and the remainder under $50,000. The total number of workers employed is 1,473, the total annual output of the factories being valued at $3,460,800. Detailed particulars of the 37 biscuit, confectionery, and canned goods factories in Shanghai are as follows:—

Name	Factory Address	Established	Capital	No. of Workers	Value of Annual Output	Principal Products
Tai Kong Canned Goods Co. Ltd. (泰康罐頭食品公司)	Arsenal Road, Nantao, S'hai	1925	$150,000	171	$440,000	Biscuits & Canned Foods
Tai Foong Canned Goods Co. Ltd. (泰豐罐頭食品公司)	Siao Si Tu, Shanghai	1906	300,000	163	850,000	Biscuits, Canned Fruits & Canned Foods
Mai Lu Canned Goods Co. (邁祿罐頭食品公司)	Shao Chia Road, West Gate, Shanghai City	1900	20,000	65	200,000	Biscuits & Canned Foods
Kwan Sun Yuan Canned Goods Co. Ltd. (冠生園糖果公司)	Kiü Meng Road, Outside of West Gate, Shanghai	1923	150,000	302	920,000	Candies, Syrup & Canned Foods
Ho Tai Biscuit & Canned Goods Factory (和濟餅乾製罐廠)	22 Yu Tung Road Shanghai	1924	40,000	154	100,000	Biscuits & Canned Foods
China Canned Food Co. Ltd. (中國食品公司)	Ning Kong Li, Fan Shin Road, Shanghai	1925	15,000	25	70,000	Chen Be Mei (陳皮梅), & Fruit-juice Beef
Pu Li Candy Co. (溥利糖果公司)	Chi Tsiang Lane, Li Ma Road, Shanghai	1922	10,000	46	50,000	Candies
Pi Shai & Co. (比賽公司)	180 Hwang Ho Road, French Concession, Shanghai	1925	10,000	14	20,000	Canned Goods
Chung Hua Shieh Chi & Co. (中華協記公司)	Hwa An Terrace, North Chekiang Road, Shanghai	1916	8,000	18	40,000	Biscuits
Hua Foo Chen Chi Biscuit Factory (華孚誠記餅乾廠)	Kung Shing Road, Chapei, S'hai	1927	10,000	26	50,000	Biscuits
Ta Loo Ling Chi Canned Goods Factory (大陸林記罐頭食物廠)	Yung Yih Li Hui Kung Road, Chapei, Shanghai	1925	10,000	15	20,000	Canned Foods

Chun Shen Canned Goods Co. Ltd. (華申罐頭食品公司)	Fan Pan Road, Nantao, S'hai	1928	10,000	12	25,000	Canned Foods
Mei Ling Canned Goods Factory (梅林罐頭食品廠)	13 Teh Tsiang Li, Route Capitaine Rabier, Shanghai	1931	6,000	5	19,000	Sance & Jam
Teh Li Candy Co. (得利糖果公司)	Wei Hai Ko Street, Nantao, Shanghai	1926	4,000	19	10,000	Candies
Teh Lung Biscuit Factory (德隆餅乾廠)	I Hwang Ho Road, French Concession, Shanghai	1919	2,000	16	15,000	Biscuits
Hsin Teh Lung Yu Chi Biscuit Factory (新德隆裕記餅乾廠)	652 Chung Hsing Road, Chapei, Shanghai	1931	1,500	20	4,000	Biscuits
Ta Feng Biscuit Factory (大豐餅乾廠)	13 Rue Lafayette, French Concession, Shanghai	1928	3,000	20	30,800	Biscuits
Chen Hua Hsin Chi Biscuit Factory (振華興記餅乾廠)	Sin Loh Li, Boulevard de Montigny, Shanghai	1925	2,000	19	40,000	Biscuits
Hsin Hua Biscuit Co. (新華餅乾公司)	West of Old North Gate, S'hai	1927	3,000	14	25,000	Biscuits
Wang Shiang Fu Chi Candy Co. (王香福記糖果公司)	12 Shen Teh Li, Dah Sun Lane, Shanghai	1916	3,000	25	20,000	Candies
Chung Hua Chong Chi Candy Co. (中華昌記糖果公司)	25 Teh Kong Li, Fu Shen Road, Shanghai	1919	3,000	11	20,000	Candies
Ta I Candy Co. (大益糖果公司)	4 Chia Ping Li, Boulevard de Montigny, Shanghai	1925	7,100	11	25,000	Candies
Ta Chen Candy Co. (大成糖果製造廠)	15, Rue Lafayette, French Concession, Shanghai	1927	3,000	31	20,000	Candies
Ta Da Canned Goods Co. (大達罐頭食品公司)	Po An Li, Boulevard de Montigny, Shanghai	1927	3,000	7	15,000	Canned Foods
Hua Mei Shen Chi Candy Co. (華美盛記糖果公司)	4 Ju I Li, Route Capitaine Rabier, Shanghai	1931	2,000	14	8,000	Candies

Tai Lai & Co. (泰賚公司)	Ping An Li, Shia Tu Road, Nantao, Shanghai	1930	3,000	4	5,000	Canned Fish
Ming Shen Shieh Chi Candy Factory (民生協記工廠)	67 Wu Ming Nan Tao Road, Nantao, Shanghai	1930	6,000	11	20,000	Candies & Chen Be Mei (陳皮梅)
Shiang Hai Minced Meat Factory (香海鮫魚肉廠公司)	168 Chen An Li, Keng Ho Road, Chapei, Shanghai	1929	500	5	9,000	Minced Meat of Fish, Pork & Chicken
Hui Tai Bakery & Biscuit Factory (滙泰麵包餅乾廠)	273 Pao Yuan Road, Chapei, Shanghai	1926	9,000	28	60,000	Bread & Biscuits
Tien Hua Biscuit Factory (天華餅乾廠)	13 Rue de Pere Froc, French Concession, Shanghai	1930	1,000	11	10,000	Biscuits
Yang Yu Shing Ho Chi Bakery & Biscuit Factory (楊裕興和記餅乾麵包廠)	512-514 Hai Chong Road, S'hai	1931	4,800	20	40,000	Bread & Biscuits
Kwan Hwa Biscuit Factory (冠華餅乾廠)	43 Sin Loh Li, Boulevard de Montigny, Shanghai	1929	1,000	15	30,000	Biscuits
Su Lu Canned Food Co. Ltd. (蘇魯食品有限公司)	West Shia Tu Road, Nantao, Shanghai	1928	20,000	47	50,000	Candies & Biscuits
Shen Shou Chang Candy Co. (盛壽昌糖果號)	Li Hai Ko Street, Nantao, S'hai	1902	3,000	16	10,000	Candies
Lao Tse Yang Kwan Canned Vegetables Co. (老紫陽觀醬菜鹽酒罐頭食品號)	506 Shantung Road, Shanghai	1889	20,000	23	65,000	Pickled Vegetables & Ju-fu (乳腐)
Chen Ting Yang Kwan Canned Vegetables Co. (眞鼎陽觀醬菜罐頭號)	265-266 Tsiu Chin Li, Hankow Road, Shanghai	1897	15,000	20	35,000	Pickled Vegetables & Ju-fu
Ting Yang Kwan Liquor & Canned Vegetables Co. (鼎陽觀露酒罐頭食品公司)	Shantung Road, Shanghai	1910	20,000	25	90,000	Pickled Vegetables & Ju-fu

BUSINESS ORGANIZATION

Generally speaking, the organization of biscuit, confectionery and canned-goods factories in Shanghai is divided into two departments, business and manufacturing. The business department may be further divided into a purchasing and sales office and an accounting office. The subdivisions of the manufacturing department vary with the nature of the output. Factories engaged in producing canned-goods are subdivided into can-making, slaughtering, cooking, and packing sections, while those engaged in making biscuits and confectionery are divided into mixing, moulding, baking, and packing sections. Large factories such as the Tai Kong and Kuan Sun Yuan have an independent sales office to deal with wholesale and retail business.

WAGES AND WORKING HOURS

Wages are paid according to the number of working hours, and are generally distributed at the end of the month, though in some small factories workers are paid daily. The best paid workers are technicians and cooks, whose wages vary from $40 to $80 a month. Ordinary male workers are paid from $7 to $25 a month, with board (and sometimes lodging) supplied by the employer. Female workers are usually paid daily at from 20 to 50 cents, sometimes with free board. Workers engaged in making paper packages, which is an auxiliary department in most of the factories, are either paid at piece-rates or on a daily basis which ranges from 50 cents to $1.

The average working hours are 10 a day, though three factories work only eight and one 12 hours. In normal times there is no night work, though exceptions occur when there is an extra rush of business to be met. The customary national holidays are observed, and employees working on holidays usually receive double pay.

MACHINE EQUIPMENT

At the Tai Foong, Tai Kong, Mai Lo, and Kuan Sun Yuan factories modern machinery is installed, but all the other factories employ only manual labor. Machinery installed in biscuit and confectionery factories is imported

either from Great Britain or the United States, while the machines used in making cans are imported from Germany, though the local product of the Yung Li Ironworks (永利鐵工廠) is also installed in some factories.

RAW MATERIALS

The raw materials used naturally vary according to the class of goods produced, and may be generally classified as follows:

Biscuits.—The most important material used in making biscuits is wheat flour, which is either imported or bought from local mills. Imported flour, used for making high-class biscuits, is sold at Tls. 4.30 per bag of 49 lbs; while local flour, used in making inferior grades, costs only Tls. 1.90. The annual production of biscuits in Kiangsu Province is estimated at 10,000,000 lbs., and the amount of flour used is 250,000 bags, of which two-thirds (170,000 bags) are imported. Other materials used are sugar, salt, soda, milk, honey, coffee, cocoa and flavorings, all being imported except salt. Sugar is bought from the Taikoo Sugar Refinery, Hongkong, at Tls. 12.40 for 135 catties. A small quantity of fresh milk is obtained from local dairies, the remainder being canned milk imported from Great Britain.

Canned meats.—These are of three different varieties—pork, bought from districts north of the Yangtse River at from $14 to $20 per picul, beef, shipped from Shantung at from $18 to $25 per picul, and mutton, from districts along the Nanking-Shanghai Railway, and costing from $8 to $15 per picul.

Canned poultry.—These goods include both chicken and duck. Some of the large factories raised their own stock, but most of these birds are from districts along the Nanking-Shanghai Railway. Chicken is sold at from 25 to 40 cents per catty, and duck at from 20 to 35 cents.

Canned Fish.—There are many varieties of this product, all of them caught either in fresh water locally or in the Yellow Sea. The phoenix-tailed fish (鳳尾魚) is obtained from Chungming and Woosung at from $18

to $25 per picul, the "yellow flower" fish (黃花魚, *Corvula schlegeli*), comes from Ningpo at from $11 to $15 per picul, and the four-gilled perch, from Sungkiang, costs $40 per picul.

Canned Fruit.—As very little fruit is grown in the vicinity of Shanghai, the canned products of local factories are made from supplies grown in other places. The most popular varieties are apricot, shipped from Shantung at from $15 to $20 per picul; peaches from Fenghua (奉化) and Feicheng (肥城) at from $20 to $30 per picul, pears from Tientsin at from $6 to $16 per picul, and plums from Hangchow at from $3 to $4 per picul.

Canned Vegetables.—The vegetables canned by factories in Kiangtu and Chinkiang are usuahy obtained locally, while those used by Shanghai factories are shipped from neighboring districts, especially Taitsang.

The tin-plates used in making cans are all imported. The Tai Kong factory consumes 200 boxes annually, each containing 112 sheets of 20 in. by 28 in., and the total consumption in Kiangsu is estimated at 10,000 boxes annually, valued at Tls. 330,000.

ESTIMATED OUTPUT

There is no accurate record in regard to the output of these factories, but according to recent investigation biscuits rank first, with canned goods second, and confectionery and sweetmeats third. The following table shows the estimated production during the three years ending 1931:—

	1929	1930	1931
Biscuits	$2,500,000	$2,820,000	$3,100,000
Canned goods	1,120,000	1,200,000	1,600,000
Confectionery and Sweet meats ..	340,000	400,000	560,000
Others	70,000	150,000	160,000
Total	$4,030,000	$4,570,000	$5,320,000

MARKETS

Shanghai products are marketed either through sales offices of the respective factories or through agents working on a commission of 15 per cent., but goods produced by other Kiangsu factories find markets on the Yangtse River and in the districts along the Nanking-Shanghai and Shanghai-Hangchow-Ningpo railways. North China is also a good market for biscuits, while the Straits Settlements takes large quantities of canned vegetables and meats. The following statistics shows the value of canned fish, vegetables, confectionery, and sweetmeats shipped from Kiangsu Province during the three years ending 1930:—

	1928 Hk. Tls.	1929 Hk. Tls.	1930 Hk. Tls.
Canned meats	56,442	46,750	60,466
Canned fish	53,244	61,051	115,055
Canned vegetables	8,805	7,646	10,773
Confectionery	9,100	18,727	23,774
Canned sweetmeats	8,442	18,197	1,010
Total	136,033	152,371	211,178

CHAPTER XXI

GOURMET-POWDER

GOURMET-POWDER is a food-seasoning the chief ingredient of which is sodium glutamate, discovered by a German scientist but not applied to commercial use until about a decade ago, when Dr. Ikeda (池田), of Japan utilized it as an element in making *Ajinomoto* (味之素) Sodium glutamate is obtained by a refining process from wheat flour, and composes from 20 to 90 per cent of the different brands of gourmet-powder.

The manufacture of this seasoning in Shanghai started about March, 1924, when the Ken Tai (根泰) and Ho Hoh (和合) companies were established. In the following year the Tien Chu Ve-Tsin Manufacturing Company (天厨味精廠) started operations, and not long after the *kwan yin feng* (觀音粉) of the China Chemical Works (中國化學工業社) appeared on the market. In June 1926 the Tien I Ve-Mo Manufacturing Company (天一味母廠) was formed, followed in 1929 by the Tai I (太乙), and Hung Fu (鴻福), while the Tien Jan (天然) Ve-Chung (味中) and Tien Sun (天生) were established in 1930.

PRESENT CONDITIONS

There are now nine gourmet-powder companies operating in Shanghai the Ken Tai, Tien Chu, the China Chemical Works, Tien I, Tien Jan, Tien Sun, Hung Fu, Tai I, and Ve Chung. Of these concerns the largest are the Tien I and Ken Tai, the former being capitalized at $150,000, with Hung Fu, Ve Chung, and Tien Jan coming next in order, each capitalized at over $50,000, while the Tien Sun and Tai I are the smallest, their capital ranging from $20,000 to $30,000. The following table shows the location, capital, date of establishment, and other particulars of these concerns:—

	Location	Sales Department	Established	Ownership	Capital	Operatives	Monthly Wages
Tieh Chu No. 1 天廚第一廠	453 Rue Hue (新閘路)	420 Nanking Road	May, 1928	Unlimited	$50,000	210	$1,800
Tien Chu No. 2 天廚第二廠	176 Rue de Marche (菜市路)	" " "	May, 1923	"	—	—	—
Ken Tai 根泰	Ching Chi Chiao, Siccawei (徐家滙蔣記橋)	Thibet Road	March, 1922	—	—	42	—
Tien I No. 1 天一第一廠	1061 Whashing Road (華盛路)	Corner of Chefoo & Chekiang Road	July, 1920	—	150,000	57	1,189
Tien I No. 2 天一第二廠	823 Kwenming Road (昆明路)	" "	" "	—	—	—	—
China Chemical Works	83 Penang Road (檳榔路八三號)	444 Honan Road	—	—	—	—	—
Tien Sun 天生	9 Chang Chia Che Hungjao Road (虹橋路張家宅)	319 Si An Road Hongkew (虹口)	June, 1921	Joint stock	$20,000	20	400
Tien Jan 天然	—	Newchwang Road	July, 1920	Limited	$52,000	40	500
Hung Fu 鴻福	237 Hung Chen (虹鎮)	Ningpo Road	August, 1929	—	50,000	21	500
Tai I No. 1 太乙第一	Hai Chang Road, Chapei (閘北海昌路)	Rue du Bayle	August, 1929	Joint stock	30,000	21	378
Tai I No. 2 太乙第二	Rue du Bayle (貝勒路)						
Ve Chung 味中	Au Yang Road Chapei (閘北歐陽路)	391 Kiangsi Road	Jan. 1932	Limited	50,000	60	500

RAW MATERIALS

The raw material for the manufacture of gourmet-powder includes *mien chin* (麵筋), a kind of dough-ball made from wheat bran, hydrochloric acid, caustic soda, alcohol, carbon powder, sodium sulphide, and sodium carbonate, all but the first two being imported. The Tien Chu factory consumes over 2,500,000 kilograms of *mien chin* annually, valued at $400,000, while the annual consumption of the Tien I, and China Chemical Works varies from 8,000 to 10,000 piculs valued at $80,000 to $100,000 respectively. Factories such as the Tien Sun and Ve Chung consume about 3,000 piculs a year, valued at over $30,000.

The hydrochloric acid used is also a domestic product, manufactured by the Tien Yuan Company (天原鹽酸廠). It is packed in jars of 100 pounds, costing about Tls. 6.50 a jar, and the daily consumption in various factories ranges from five to 20 jars. In the Tien I and China Chemical Works the annual comsumption varies from 8,000 to 10,000 jars, but the Tien Chu company consumes the largest quantity, a total of 25,000 jars being used annually, valued at Tls. 162,500.

The China Chemical Works annually imports sodium carbonate to the extent of over 400 piculs, valued at 25,000 taels; caustic soda used in the same factory comes from the United States, the annual figure amounting to 420 piculs, valued at $7,200; alcohol is imported from Java amounting to 5,000 gallons a year, valued at $7,200; carbon powder comes from Germany, the annual import amounting to 4,000 pounds, valued at $2,400; and sodium sulphide comes from England, amounting to 1,400 pounds.

OUTPUT

The output of the various factories differs in name—the *ve tsing* (味精) of the Tien Chu Company, *ho ho feng* (和合粉) of the Ken Tai Company, *ve mo* (味母) of the

Tien I Company, *chen wei* (眞味) of the Hung Fu Company, *mai tsing feng* (麥精粉) of the Tai I Company, *kuan yin feng* (觀音粉) of the China Chemical Works, *wei chung su* (味中素) of the Ve Chung Company, *tse ve su* (滋味素) of the Tien Sun Company, and the *hsien wei tsing* (鮮味精) of the Tien Jan Company, are all powders of the same nature.

The capacity of a large factory varies from 80,000 to 12,000 pounds a year, while in the small concerns the annual production ranges from 20,000 to 30,000 pounds.

MARKETING

Gourmet-powder is usually packed either in tins or bottles for shipment. The latter vary in size, the No. 1 size, packed in boxes of five dozen is sold at $41 a box, while the No. 2 packed in boxes of 10 dozen is sold at $40. Cases containing two dozen bottle of gourmet-powder of larger size are marketed at $160 with smaller cases sold at $84.

Most of the gourmet-powder exported goes to Canton, with Tientsin, Amoy, Nanking, Hankow, Swatow and Tsingtao next in importance. Hongkong and Singapore take the lead among foreign ports in taking gourmet-powder from China, with Manila coming next.

The Tien Chu Company has the largest turnover, over $1,000,000 worth of gourmet-powder being sold annually. The output of the Tien I Company is estimated at over $500,000 while in other factories the turnover ranges from $50,000 to $100,000. The following table shows the production of various companies, with their trade-marks and other particulars:

	Product	Trade-Mark	Production capacity	Actual Output	Distribution	Market price	Annual Distribution Quantity	Annual Distribution Value	Comparative distribution figures 1929	1930	1931
Tien Chu	Ve Tsing (味精)	Buddha Hand (佛手)	40,000 boxes	22,000 boxes	Shanghai, Tientsin, Hankow.	$10 a box packed with bottles, 90 a box backed with tins	6,900 boxes (tins) 14,000boxes (bottles)	$1,100,000	$900,000	$1,100,000	$950,000
Tien Chu	Tsiang Yu Tsing (醬油精)	" "	—	300 boxes	--	20 a box	300 boxes	6,000	5,700	5,900	6,000
Tien Chu	Tsiang Seh (醬色)	" "	—	6,000 tins	Shanghai & Shaohing	5 a tin	5,800 tins	29,000	26,000	28,000	29,000
Tien Chu	Ling Feng (菱粉)	" "	—	2,500 piculs	—	10 a picul	2,500 piculs	25,000	25,000	24,000	25,000
Tien Chu	Hu Tsing (糊精)	" "	—	400 piculs	Shanghai	17 a picul	250 piculs (from Jan. to Oct. 1932)	—	—	—	—
Tai I	Malt	Double Peach (雙桃)	—	25,600 to 30,000 lbs.	Straits Settlements, Hongkong and Canton	$60 a box of 2 doz. of 20 *liang* $26 a box of 3 doz. of 10 *liang* $26 a box of 12 doz. of 2.5 *liang* $8 a box of 5 doz. big bottle, a box of 10 doz. second size bottle, a box at 20 doz. third size bottle, and a box of 40 doz. smallest size.	—	—	—	60,000	100,000

Tien Sun	Tse Wei Su (鮮味素)	Bean and Wheat (豆麥)	3,000 boxes	2,000 boxes	Kiangsu, Chekiang, Hupeh Kwangtung Chefoo, Manila	$160 a box of 2 doz. large tins; $84 a box of 2 doz. second size tins; $108 a box of 10 doz. small tins.	2,000 boxes	$150,000	—	—	—
Tien Sun	Hsien Wei Tsing (鮮味晶) Hsien Ve Che (鮮味汁) Tsiang Yu Tsing (醬油精)	*Fu Kuang* (佛光)	—	7,000 to 80,000 lbs.	Straits Settlements and Philippine Islands	—	—	—	—	—	—
Hung Fu	Ve Tsung (味宗)	Hung Fu (紅福)	—	70,000 lbs.	Kiangsu & Chekiang	—	—	—	—	—	—
Tien I	Ve Mo (味母) Ve Mo Che (味母汁)	Lotus Flower (蓮花)	220,000 lbs.	120,000 lbs.	Various Provinces	$176 for large box, $40 for small box.	6,000 boxes	$500,000	$200,000	$350,000	$500,000
China Chemical Works	Kuan Yin Feng (觀音粉)	Three Stars (三星)	180,000 lbs.	8,000 lbs.	Shanghai, Canton, Tientsin, Tsingtao, Hangchow, Ningpo, Hongkong, Philippines	—	—	—	$27,000	$40,000	$60,000
Ve Chung	Wei Chung Su (味中素) Tsiang Yu Tsing (醬油精)	Chia Ho (嘉禾)	43,000 lbs.	—	Tientsin, Tsingtao, Tainan, Hankow, Kuenming	—	3,000 lbs. daily	$10,000	—	—	—
Ken Tai	Ho Ho Feng (和合粉)	—	—	—	—	—	—	$25,000	—	—	—

CHAPTER XXII

WINE AND SOY

WINE industry in China started from time immemorial but the primitive method adopted continued in use until 1895 when the Chang Yu Wine Manufacturing Company (張裕釀酒公司) was established in Chefoo, Shantung Province. In 1916 the Shuang Ho Sheng Beer Brewery (雙合盛啤酒公司) came into existence at Peiping and in 1920 the Hui Chuan Beer Brewery (惠泉啤酒公司) was subsequently established at Wusih, while the Kun Lun Wine Company (崑崙釀酒公司) and the China Wine Manufacturing Company (中國釀酒公司) were established at Shanghai in 1924, and since then the wine industry in China has been gradually developed. In regard to the manufacture of soy most factories adopt primitive method with the exception of the Wan Kang Soy Manufacturing Company (萬康醬油公司) at Shanghai, where modern equipment are installed. Some gourmet powder manufacturing companies in Shanghai take up soy-essence as their side line.

PRESENT CONDITIONS

In Kiangsu Province those factories devoted exclusively in wine making are known as *chao fang* (糟坊), *cho fang* (作坊) or *chiu fang* (酒坊), while those in the manufacture of soy are known as *tsiang yuan* (醬園). This distinction, however, could not be clearly made for *tsao fang* also produces vinegar, while from *tsiang yuan*, wine and vineger may be obtained in addition to soy.

Wine and soy manufacture are found practically everywhere throughout the Province. The production of "white wine" is confined to northern districts, where barley is a special product for the making of that variety, while in the south "yellow wine" is a special product, made from glutinous rice. Yangho Chen (洋河鎮) of Ssuyang is

the most famous producing place for "white wine," and the so-called *yang ho ta chu* (洋河大麴) has been known in the public for over two hundred years. Wine makers are also engaged in the production of vinegar, and Chinkiang being the most famous producing center. Chinkiang vinegar classified into *lu chu* (滷醋), *ti chu* (滴醋), but their output is very limited. The following table shows the distribution of wine makers in Kiangsu with their capital, output and other particulars:

	No.	Capital	Variety	Annual Output in Piculs	Value
Shanghai	54	$850,000	Soy, wine	286,000	$1,245,000
Wuhsien	63	——	Pasty soy, soy	55,000	485,000
Kiangyin	136	——	Pasty soy, soy, "yellow" wine	60,550	244,000
Changshu	91	——	"Yellow" and "white" wines, pasty soy, soy	54,000	343,500
Tanyang	25	81,000	"Yellow" and "white" wines	27,250	215,000
Wusih	52	——	"Yellow" and "white" wines, soy	165,000	720,000
Kunshan	5	20,000	„ „	31,500	214,800
Taitsang	4	40,000	„ „	42,000	210,000
Kaiting	26	——	„ „	37,000	315,000
Tsingpu	7	——	"Yellow" and "white" wines, pasty soy, soy	3,812	40,320
Nanhui	13	——	"White" wine and soy	23,200	218,850
Ihsing	76	——	"Yellow" wine, pasty soy, soy	16,500	30,000
Chinkiang	26	——	Soy, vinegar	26,900	——
Wuchin	9	103,000	"Yellow" and "white" wines	57,000	305,000
Nanking	2	75,000	Wine	——	——
Ssuyang	8	43,000	"White" wine	6,040	90,600
Suchien	36	——	„ „	8,000	96,000
Tangshan	17	——	„ „	2,200	33,000
Fenghsien	32	——	„ „	4,526	99,792
Peihsien	42	——	„ „	9,000	180,000

Hsiaohsien	43	——	"White" wine	1,500	30,000
Peihsien	31	——	„ „	6,000	72,000
Tungshan	81	41,300	„ „	9,500	185,000
Suining	16	——	„ „	3,000	51,000
Shuyang	24	——	„ „	5,500	100,000
Kiangtu	110	——	Soy, pasty soy	30,000	282,000
Taihsing	1,550	——	"White" wine	200,000	2,200,000
Kiangtu	49	55,500	„ „	9,280	148,480
Tunghai	26	54,100	Soy, "white" wine	7,930	102,820
Taihsien	400	——	"White" wine	78,400	940,800
Yencheng	35	——	„ „	5,880	70,560
Hsinghua	23	——	„ „	3,920	47,040
Tungtai	245	——	„ „	47,040	564,480

RAW MATERIAL

The raw material used in wine making varies with the nature of the manufacture. In making "yellow" wine the chief ingredient is glutinous rice, which is found practically everywhere in the southern districts, with Tanyang leading in quality. The "white" wine may be classified into *kaoliang shao* (高粱燒), *tai mai shao* (大麥燒), *yuan mai shao* (元麥燒) and *lu tou shao* (綠豆燒). In making *kaoliang shao* kaoliang is used, with barley and early crop wheat for *ta mai shao* and *yuan mai shao* respectively, while for *lu tou shao* small green beans are used. There is another kind of wine known as *yu shu shu shao* (玉蜀黍燒) which is made of maize.

The chief ingredients for making soy consist of soya bean, flour and salt. Soya beans come mostly from Dairen with salt and flour, obtained locally.

PROCESS OF MANUFACTURE

The process of making "yellow" wine is quite complicated. The chief raw materials required consist of yeast powder, known as *chiu ya* (酒藥) or "wine medicine," *chiu chu* (酒麴), or liquor base, and *chiu niang* (酒釀) or "mother liquor." The "wine medicine" may be classified into black and white, the make up of the former being *la liao tsao* (辣蓼草, *Palygonum flaccidium* and early rice powder, while for the latter salted orange peels, pepper, liquorice and *tsang shu* (蒼朮), are required.

The *la liao tsao* is gathered in summer and after dried in sunshine, the leaves are reduced to powder by grinding. Until November the powder is mixed with the juice of the fresh la *liao tsao* and early rice flour. The *la liao tsao* powder is mixed with early rice flour at the proportion of 1 to 10. The mixture, after being cut into small blocks, is coated with "wine medicine" and covered with mats and grass. Then they are put into an ill-ventilated room to be fermentated. After one or two days the blocks are taken out from the room and dried in the sun. In winter these blocks are reduced into powder.

The raw material for manufacturing "liquor base" consists of barley and wheat, the mixing of 2 portions of the former with 8 of the latter being the right proportion. The mixture should be also grined into powder, which is mixed with 45 catties of flour and 12 catties of water. After thorough mixing, it is reduced into a pasty form which is cut into small blocks to be fermentated after being covered with grass.

The "mother liquor" is prepared from "wine medicine," steamed rice, "liquor base" and water. After being steamed the glutinous rice is put into an earthernware with "wine" medicine." After one or two days the mixture is added with 170 catties of water and a little quantity of "liquor base." After thorough mixing the earthernware is covered with grass in order to start fermentation process. "Mother liquor" is formed after five or six days.

The process of making "yellow" wine may be briefly described as follows: The rice is first soaked in cold water for a period of 15 days and then thoroughly washed before being poured into a bucket to be steamed. The well-steamed rice is then put into a jar of pure water and to this mixture, "liquor base," "mother liquor" and *tsiang shui* (漿水) or rice juice are added. The right proportion for this mixture should be as follows: water, 140 catties, steamed rice, 170 catties, "liquor base," 40 catties; "mother liquor," 70 catties and *tsiang shui*," 100 catties. After thorough mixing the jar is covered with a grass mat to start fermentation. After five or six days the mixture is poured into separate porcelain vessels which are covered with mat and left on the ground for 70 or 80

days for further fermentation, after which, impurities are removed by a purifying machine. The *tsiang liao* (醬醪) is then put into silk bags of three feet long and four inches in diameter. These bags are piled up and thus pressing out the fluid. At beginning the fluid consists mainly of yeast and starch but after a few days it becomes clean and wholesome. The fluid thus obtained is kept in a jar for sometime in order to let the particles to settle down. The clean fluid is transferred to clean jars for storage, and after a few months the residue found in the jar are taken out for further pressing. This process repeats for several times in order to make the liquid as pure as possible. Then, the liquid has to be heated to 56° F for sterlization before placed in a jar for storage. The jar is sealed tight with earth and stored for several months. The longer it is stored, the better will be the taste of the contents, which is known as "yellow wine," and is ready for the market.

The "white" wine is also known as *samshu* or "burning" wine (燒酒), its process of manufacture being comparatively simpler than that of the "yellow" wine. The raw materials for making this wine consist of kaoliang, barley, maize, or small green beans. Districts north of the Yangtse River use kaoliang and maize in manufacture, while in southern districts, barley and small green beans are used. The raw material is first soaked in water about 24 hours and after being thoroughly washed, they are placed in a kettle for boiling. After mixing with "liquor base" and "wine medicine" the mixture is spread on a specially constructed platform for drying. The mixture is covered with mats or grass in order to start fermentation, and it should be stirred once at least in every six or seven hours. After twenty four hours the mixture is removed to a jar which is sealed tight at the opening, and after six days in warm weather or eight days in cold weather, the jars are unsealed and the liquid is transferred to distilling plant for steaming and sterilization.The distilling apparatus consists of a wooden pan of two feet in height and two feet in width with several holes in the bottom. On the cover there is a brass distilling-flask with a tube serving as an outlet for the distillate. During the

distilling process, the pan containing the fermented mixture is first heated. The steam thus rising from the pan is conducted through the hole on the cover to the flask. As soon as the steam comes into contact with the cold bottom of the flask, it condenses, and the distilled liquid flows out through the side tube into a receiver. The whole process lasts about two hours, after which the mixture is taken out and replaced by another batch of fermented mixture, and the liquor thus distilled is the so-called "burning wine" or *shao chiu.*

The raw materials for making soy consist of bean and flour. The preparation is no simple matter. It is a long process of fermentation and requires both knowledge and experience for its proper preparation. Beans are first washed with clean water and then cooked in a big iron vessel for about 6 hours, after which period, they are put into a *kong* (缸) or a big earthenware vessel, in which they are mixed with flour. The mixture is constantly rubbed by hand until it is reduced into the form of paste, which is spread over shallow bamboo baskets which are placed in a dark and ill-ventilated room to start fermentation. After one week this mixture is known as *tsiang* (醬), and to which, water, salt and flour in diluted state, are added. The mixture should be stirred at least twice a day until it gradually becomes dark brown in color. When the solution reaches this stage it is known as *tsian liao* (醬 醪), which is put into a cloth bag and tighed tight at the opening. They are then pressed so as to extract the soy, which is known as *mu yu* (母油) or "mother" soy. The residue thus left over may be further mixed with water and salt and pressed for soy of an inferior quality. In making high grade soy, which is known as *tao yu* (套 油) *mu yu* is usually mixed with water and *tsiang liao* and then pressed.

In the manufacture of vinegar glutinous rice is the most important raw material. The way of manufacturing is somewhat similar to that of wine except that brown sugar is required in order to make the color darker.

OUTPUT

The "yellow" wine is yellow in color and weaker in taste than the "white" wine. The production in Kiangsu Province is hardly enough for local consumption and the deficit is made up from Shaohing (紹興), Chekiang Province, a wine distilling center of nation-wide fame. The annual production of "yellow" wine in Kiangsu Province is estimated at 378,440 piculs, valued at $2,127,600.

The "white" wine is white in color and stronger in taste than the "yellow" wine, and contains less water. The production of "white" wine in various *hsien* throughout the Province is estimated at over 497,526 piculs, valued at $5,893,672. However, owing to bandit activities, famine and heavy taxation the output has been reduced recently. The "white" wine is sometimes made of homes of farmers and it is estimated that the number of such household distillers in the whole Province amount to 3,500.

The soy is found mostly in districts south of the Yangtse River. People in northern districts of the Province use salt in its stead as cost of living there is lower than the in the south. The annual production of soy in the Province amounts to 690,000 piculs, valued at $1,799,200.

Vinegar is a speciality of Chinkiang, its annual production amounts to 1,500 piculs, while the annual production for the whole Province is estimated at over 68,000 piculs, valued at $544,000.

DISTRIBUTION

The output of soy, "yellow' wine and vinegar of Kiangsu Province is mainly for local use. The "white" wine produces in the northern districts finds outlet also to Haian (海安) of Taihsien. At Haian, there are 11 wine commission agents whose business is to buy wine directly from distillers and sell them to consumers. This is done usually at the time of slack seasons, but when the business is good the Haian agents acts as go-betweens and receive commissions in return.

MODE OF TRANSACTION

The measurement used to indicate the quantity of wine is a tin jar whose weight is fixed at 5 catties. The jar varies in size, the big ones can hold 350 catties, while the smaller ones, 100 catties. After the deal is closed the agent

usually gets 50 cents a picul from seller and 23 cents from the buyer. If the deal is done on cash basis the agent has to give a return commission of 17 cents a picul to the representative of the buyer. If the payment is settled within one month, the agent should also give a return comission of 3 cents a picul to the representatives of the buyer. There will be no return commission given in case the payment being made after one month or more. After buying the buyer usually borrows wine jars from the commission agent for shipment, upon a payment of deposit. Upon the return of jars the deposit will be refunded.

MARKET

The "white" wine porduced in Kiangsu Province finds its way to Anhui, Honan and Shantung and their vicinity, while "yellow" wine, vinegar and soy are found almost everywhere throughout the Province with Shanghai, Nanking, Nantung and Chinkiang lead in importance.

The total number of wine and soy makers in Kiangsu Province is distributed as follows:

	Soy Makers	Wine Makers	Total
Shanghai	50	2	52
Tanyang	—	25	25
Wusih	—	19	19
Kunshan	5	—	5
Kiangyin	14	14	28
Changshu	7	2	9
Taitsang	1	—	1
Kaiting	6	10	16
Tsingpu	2	5	7
Nanhui	10	3	13
Chinkiang	25	1	26
Wuchin	—	9	9
Nanking	—	2	2
Kiangtu	8	—	8
Ssuyang	—	8	8
Shuyang	—	4	4
Tungshan	—	35	35
Kangyu	—	47	47
Tunghai	13	13	26
Fenghsien	—	—	32
Tangshan	—	17	17
Suining	—	16	16
Taihsien	—	47	47
Yencheng	—	13	13
Tungtai	—	7	7

CHAPTER XXIII

CANDY SUGAR

SUGAR made its first appearance in China far back in Han Dynasty (about 200 B.C.) when the remote small country of Cochin in far south presented a brown sugar as tribute to the Chinese Emperor. During the reign of Tai Tsung of Tang period (唐太宗, the latter half of 7th century) the art of manufacturing sugar was introduced from India, and as years went by it gradually became popular among the people, until 50 years ago the industry developed at its climax. The southern districts of Canton, Kiungchow (瓊州), Shiuchow (韶州), Limchow (廉州) and Chaochow (潮州) in Kwangtung Province and Changchow (漳州) and Chuanchow (泉州) in Fukien Province are the most famous sugar manufacturing centres, while the volume of business done in a year is almost as big as that attained by the world-famed sugar centers of India, Java, Philippine Islands and Cuba. The production was very great then and a large portion was exported abroad, the export figure in 1880 being over 100,000 tons.

But the prosperity did not remain long. The development of beet-sugar industry in Europe displaced the Chinese supply in foreign markets, the concession of Hongkong to Great Britain and Formosa to Japan cut two large sugar sources of China, and furthermore the unscientific methods of manufacturing coupled with the frequent political chaos in the country and heavy taxes greatly curtailed its output. As a result, over $100,000,000 worth of foreign sugar was imported every year.

Such a big leakage alarmed some of the patriotic merchants interested in this enterprise, and a $5,000,000 capital sugar factory covering more than 300 *mou* of land was established in 1921 by the Pu Yi Industrial Co. of Peiping (北平溥益實業公司) at Tsinan, Shantung Province, engaging about 600 hands and turning out 60 tons a day. In 1925 another factory, the China National

Sugar Refinery (中華國民製糖公司), organized by a group of merchants commenced operations at Wentsaopang (蘊藻浜), a suburb of Shanghai, with a capital of $20,000,000 and covering an area of over 200 *mou*. Employing more than 300 hands, it has a capacity of 300 tons of refined sugar daily. With very good prospect these two Chinese owned concerns were with every possibility of success. But the foreign sugar merchants, with a view to maintaining their market in China, undersold their products in China and coupled with the fact that the treaty-bound Chinese tariff then could do nothing in checking the importation of foreign sugar. As a result of an incompetent competition with the foreign dealers, the two large factories were compelled to close down.

In 1931 the Ministry of Industry contemplated to establish a state sugar refinery with a capital of G.$5,000,000 borrowed from the Cuban sugar merchants, but the outbreak of Sino-Japanese hostilities in Shanghai on January 28, 1932 prevented the materialization of this scheme.

PRESENT CONDITIONS

The increase of tariff on imported sugar in 1931 encouraged this industry, and over ten candy-sugar factories were established in Shanghai, but since the Shanghai hostilities this enterprise has been on the decline, and the adoption by the Customs of polarization in standardizing the price of material sugar caused suspension of several concerns. The only remainders that are operating now total six, tabulated as follows:

	Location	Trade Mark	Varieties of Output
Chung Hua (中華)	Lo Ka Wei, Sha'i.	"Red Star"	1st, 2nd, & 3rd grades candy-sugar
Kuo Hua (國華)	„	"Flying Star"	„
Shanghai Chen Chi (上海振記)	Zicawei, Sha'i.	"Golden Bell"	1st and 2nd grades candy-sugar
Chen Hsing (振興)	Lannido, Pootung, Sha'i.	—	Cady dreg
Chen Sin (振新)	„	Pakua (八卦)	„

All these factories are operating on a small scale. The Shanghai Chen Chi, Chung Hua and Kuo Hua having a capital of $24,000, $20,000 and $10,000 respectively, but the other three have a capital of only a few thousand dollars. The number of hands employed ranges from 20 to 40

The most important part of the equipment of candy-sugar factory is the boiler; next is the drying-room, built of brick, fitted with many shelves for sugar-trays. There is a door on one of the drying-room sides and a number of holes are made in the roof, by opening and closing which the heat is maintained at a suitable degree for drying the candy.

PROCESS OF MANUFACTURE

Coarse white sugar, Dutch Standard No. 24, mixed with some green sugar, is boiled until it becomes sticky, and when the temperature reaches 120 degrees the fire is reduced a little. After twenty minutes the syrup is poured into tin trays with some sugar dust sprinkled on the surface in order to retain the heat and put in a cool place to crystallize. A week or ten days later, the contents of the trays crystallize into candy-sugar, and is taken to the drying-room. When broken into pieces after being dried the sugar is graded into flake candy-sugar (片冰), the best quality, and 1st grade candy-sugar (頭號冰). The uncrystallized content of the trays is boiled again for 35 minutes and a second crystallization produces 2nd grade candy-sugar (二號冰). A third boiling lasts 45 minutes and yields 3rd grade candy (三號冰), which is brown in color. The residue left at the bottom of the boiler can not be crystallized into candy-sugar, and when dried over a fire becomes green sugar.

The varieties of candy-sugar produced by the factories of Shanghai include flake candy-sugar, 1st, 2nd, and 3rd grades candy-sugar, and candy dregs (渣冰). The production varies according to demand and the price of raw materials, the average output during the past twenty years reaching 80,000 piculs per annum, though that of 1932 amounted to 40,000 piculs only.

MARKETS

The largest market for candy-sugar is Shanghai, with Tientsin next and Hankow third. The varieties chiefly consumed in Shanghai are flake and 1st grade candy, those consumed in Tientsin and Hankow being 1st grade and candy dreg respectively, while the 2nd grade candy is sold chiefly along the Lunghai Railway and other rural districts.

The 1st grade candy is packed in rush baskets containing 50 catties; the 2nd grade is put up in rush baskets or bags, each weighing 180 catties; the 3rd grade in bags, also of 180 catties; while candy dregs are packed in bags of 164 catties each.

CHAPTER XXIV

TEA-FIRING

KIANGSU is not a tea-growing district, but Shanghai as the country's chief export center handles a large amount of unfired tea shipped from producing districts and prepared in Shanghai before being exported. The beginning of this industry dates back to the time when the city was first opened to foreign trade as one of the five treaty-ports, and when the tea trade gradually drifted to Shanghai from Canton. In the early days all tea destined for foreign countries was fired in the producing districts, but exporters in Shanghai found it necessary to establish their own plants for preparing tea in a manner more likely to suit the taste of foreign consumers. The experiment proved successful, and in consequence, from 30 to 40 tea-firing plants, known as *tu chuang cha chan* (土莊茶棧) and engaged exclusively in firing and coloring raw leaves shipped from the producing districts, soon came into existence. The industry enjoyed a very prosperous period, and in 1925, the number of plants increased from 73 to 108, but owing to inadequate attention being paid to methods of manufacturing, trade began to decline, and the number of plants fell to 72 in 1927, to 62 in 1928, and to 59 in 1930. The outbreak of Sino-Japanese hostilities in Shanghai in January, 1932, gave another big setback to the industry, as most of the plants were located in Chapei, and many were completely destroyed.

Since those hostilities the number of tea-firing plants operating in Shanghai has been reduced to 42, classified into groups according to the provincial birthplaces of their owners. The Anhui group leads both in regard to number and amount of capital invested, with Kuangtung and local groups coming next. Particulars showing names, addresses, capital, number of workers, annual output, etc. of the plants now operating in Shanghaoi follow·

	Address	Established	Group	Capital	No. of Workers	Annual Output (Chests)	No. of Rolling Machines
Kung Shen (公 升)	Teh An Fang, N. Chekiang Road (北浙江路德安坊)	1930	Anhui	$5,000	15	1,000	3
Teh Jen (德 潤)	Sin Chang Li, N. Chekiang Road (北浙江路信昌里)	1932	"	10,000	20	2,000	3
Hsing Hsing (星 星)	Chun Shou Li, Burkill Road (白克路聚壽里)	1930	Local	3,000	10	1,000	3
Yung Hsiang (永 祥)	W. Tong Kia Lung (西 唐家 弄)	1932	"	5,000	9	1,000	3
Yuan Hsing Ho (源 興 和)	" "	1926	Anhui	10,000	20	2,000	4
Pao Chang, Branch (保 昌 分 廠)	Tong Kia Lung	1932	Local	5,000	20	2,000	4
Chien Chi Hsiang (謙 吉 祥)	" "	1932	Kuangtung	5,000	11	1,000	3
Yuan Li (源 利)	" "	1918	Anhui	5,000	13	1,000	3
Yuan Tai Ho (源 泰 和)	" "	1932	"	5,000	15	1,000	3
Tien Cheng (天 成)	N. Shansi Road (北山西路)	1932	Kuangtung	4,000	10	1,000	3
Wu Shen Chi (吳 森 記)	" "	1930	Anhui	5,000	20	2,000	4
Chun Yuan (臻 源)	Jukong Road (虬江路) ..	1931	Kuangtung	5,000	20	1,000	4
Pao Chang, Head-office (保 昌 總 廠)	" "	1930	Local	10,000	30	2,000	7

Tung Chun Fu (同春富)	Yung Hsin Road (永興路)	1931	Anhui	3,000	15	600	3
Yu Li (有利)	Tai Yuan Fang, Haining Road (海寧路太原坊) ..	1927	Kuangtung	8,000	20	2,000	4
Hsing Yuan (星源)	〃 〃	1927	〃	5,000	20	2,000	3
Yi Tung Hsing (義同興)	Yu Hsiang Li, Tong Kia Lung (唐家弄裕祥里) ..	1925	Anhui	5,000	13	2,000	3
Pao Ta Hsiang (寶達祥)	Yu Shun Li, Chen Ta Lung (成大弄餘順里)	1930	〃	2,000	8	800	3
San Yuan (三元)	Elgin Road (愛而近路) ..	1923	Kuangtung	10,000	22	3,000	7
Chu Sheng (聚生)	〃 〃	1925	Anhui	3,000	15	1,000	5
Fu Hsing (復興)	〃 〃	1932	Kuangtung	4,000	10	800	3
Yuan Ho (源和)	〃 〃	1929	Nanking	10,000	28	2,000	7
Tung Chun Fu (同春福)	Tung Chang Li, Haining Road (海寧路同昌里) .	1932	Kiangsi	5,000	10	1,000	3
Wan Cheng Hsiang (萬成祥)	Fu Shou Li, Elgin Road (愛而近路福壽里)	1930	Anhui	5,000	20	1,000	3
Kui Yuan (奎元)	Lan Yien Li, Wuchow Road Road (梧州路蘭言里) ..	1931	〃	5,000	10	600	3
Yung Sheng (永升)	Tu Nan Li, N. Honan Road (北河南路圖南里)	1932	〃	3,000	15	500	3
Hung Chang (洪昌)	Elgin Road	1931	Wenchow	3,000	10	1,000	3

Tung Yu Tai (同裕泰)	Yu Shun Li, Chen Ta Lung (成大弄餘順里)	1932	Local	5,000	8	1,000	3
Jen Chi (仁記)	" "	1925	Anhui	3,000	20	1,000	3
Heng Fung (恆豐)	Teh An Li, N. Shansi Road (北山西路德安里)	1931	Local	8,000	20	1,000	3
Yi Cheng Hsiang (怡成祥)	" "	1923	Anhui	6,000	4	1,000	3
San Yi (三宜)	" "	1932	Kuangtung	5,000	30	2,000	3
Hsing Chi (興記)	Chen Ta Lung, N. Soochow Road (北蘇州路成大弄)	924	Anhui	5,000	20	1,000	3
Chang Chi (昌記)	Lane 6, Tao Yuan Fang (桃源坊六弄)	1924	Local	5,000	20	2,000	4
Tien Sheng Kung (天生公)	N. Shansi Road (北山西路)	1932	"	5,000	10	1,000	3
Tung Yi Fung (同益豐)	N. Honan Road (北河南路)	1929	Anhui	5,000	15	2,000	5
Yi Tai Lung (義太隆)	Wuchang Road (武昌路)..	1932	"	5,000	10	1,000	3
Ho Hsing Lung (合興隆)	Woosung Road (吳淞路)	1932	"	5,000	10	1,000	3
Ho Hsing Lung (合興隆)	Tu Nan Li, N. Honan Road (北河南路圖南里)	1932	Kuangtung	3,000	15	800	3
Hui Chi (匯記)	Yalu Road (鴨綠路)	1932	Kiangsi	3,000	20	2,000	3
Tung I (同益)	Paotung Road (寶通路)..	1932	Kuantung	3,000	15	1,000	3
Pei Hsin (北新)	N. Shansi Road (北山西路)	1932	Anhui	3,000	15	1,000	3

From the above table, it appears that the total capital of the 42 plants in Shanghai is $208,000, with an average of $7,242 for each. Actually, five plants have a capital of $10,000 each, two have $8,000, one $6,000, 22 have $5,000, two have $4,000, nine have $3,000, and one has $2,000.

During the prosperous days of the industry there were over 1,600 workers employed in the tea plants in Shanghai, but at present, the number has been reduced to about 660. The Anhwei group is mostly engaged in preparing green tea, while the Kiangsi group specialize in black tea.

WAGES AND WORKING CONDITIONS

Wages are paid on a daily basis, and vary according to the work done. Generally, a foreman receives about $1 a day, those doing the sorting and coloring of leaves get 70 cents, tea-firers about 65 cents, and ordinary workers 50 cents. Wages are paid by the foreman at the end of each day, the workers also receiving free meals from the management. The working day is from 6:30 a.m. to 5:30 p.m., with a 20-minutes interval for meals. In the busy season night shifts are worked, being counted as a full day's work from 6 p.m. to 11 p.m., and as two days' work from 6 p.m. till dawn next day. Workers have no Sundays off, but observe the customary holidays in the lunar calendar.

The tea plants do not operate all year round, and are working for only five or six months in the year. When business is depressed, working may be further reduced to two or three months in the year. Owing to this uncertainty workers are not regularly engaged, most of them being temporarily hired as necessity arises.

SUPPLIES OF LEAF

Unfired tea shipped from the interior is classified into eight categories according to the place of origin. What is known as Huichow tea (徽州茶) comes from Hsihsien (歙縣), Wuyuan (婺源), Ihsien (黟縣), Chiki (績溪), Kimen (祁門) and Siuning (休甯).

Lianghu tea (兩湖茶) includes leaf from Huangkang (黃岡), Chishui (赤水), Lotien (羅田), Chichun (蘄春), Kuangchi (廣濟), Tayeh (大冶), Yangsing (陽新), Pingloussu (平樓司), Tashaping (大砂坪), Hsienning (咸甯), Ichang (宜昌), Changyang (長陽), Itu (宜都), Sinan (施南) and Huofeng (鶴峯) all in Hupeh Province, and Changteh (常德), Taoyuan (桃源), Anhua (安化), Weishan (爲山), Singhua (新化), Yungchi (雲溪), Paoching (寶慶), Changsha (長沙), Pinkiang (平江), Siangtan (湘潭), Siangyin (湘陰), Liuyang (瀏陽), Liling (醴陵) and Yangloutung (羊樓峒) in Hunan Province.

Wenchow tea (温州茶) includes leaf from Pingyang (平陽), Tsingtien (青田), and Taiyu (泰隃) of Chekiang Province; and Kiangsi tea (江西茶) comes from Suishui (修水), Wuning (武甯), Tungku (銅鼓), Shangyao (上饒), Fowliang (浮梁), and Yushan (玉山).

Pingshui tea (平水茶) includes leaf from Shaohing (紹興), Shangyu (上虞), Singchang (新昌) and Chenhsien (嵊縣) Chekiang Province, and Ningpo tea (甯波茶) includes the product of Yuyao (餘姚) and Fenghua (奉化) of Chekiang Province.

Huchow tea (湖州茶) is grown in the districts formerly under the jurisdiction of Huchow prefecture, and Taichow tea (台州茶) is grown at Taichow and Hwangyen (黃巖).

Tea is shipped to Shanghai for firing packed in gunny sacks or in bamboo crates lined with bamboo sheaths, the capacity varying with the place of origin. For instance, Ningchow tea weighs from 120 to 190 catties per crate, Wenchow tea, from 150 to 200 catties per crate, Huichow tea, from 120 to 130 catties for large crates and from 60 to 70 catties for small, while Pingshui and Lianghu tea is generally packed in sacks of from 150 to 200 catties.

Huichow tea is first sent to Tunchi (屯溪), by carriers, thence shipped to Hangchow by sailing-boats, and from that place is forwarded by the Shanghai-Hangchow-Ningpo railway to Shanghai.

Hupeh tea is first collected at Hankow, and then shipped direct to Shanghai. The centers for Hunan tea are Changsha and Siangtan, whence the leaf is sent to Hankow by the Hunan-Hupeh railway, and then shipped to Shanghai. Leaf from Changteh and Taoyuan is sent by water routes to Hankow, and thence shipped to Shanghai. Ningchow tea is first collected at Tuchiapu (塗家埠) and forwarded to Shanghai by way of Kiukiang. Tea grown in Ningpo, Taichow, and Wenchow is shipped direct to Shanghai by steam-launches; Pingshui leaf is either shipped by rail via Hangchow, or by steamer from Ningpo, while Huchow tea is brought to Shanghai by steam-launches through Soochow Creek.

As methods and routes of transportation vary so widely, freight charges also differ considerably. The following table gives details in regard to freight and time required for shipping tea to Shanghai by different routes:

From	To	Freight per Picul	Days Taken
Tunchi (屯溪)	Hangchow	$1.80	3
Hangchow (杭州)	Shanghai	1.20	1
Tuchiapu (塗家埠)	Kiukiang	1.14	1
Kiukiang (九江)	Shanghai	2.76	2
Taichow (台州)	Shanghai	1.00	2
Wenchow (溫州)	Shanghai	0.54	2
Pingyang (平陽)	Shanghai	0.50	2
Huchow (湖州)	Shanghai	0.30	2
Ningpo (寧波)	Shanghai	0.80	1
Sinchang (信昌)	Hangchow	3.00	2
Chenhsien (縣縣)	Hangchow	3.00	2
Shaohing (紹興)	Hangchow	3.00	2
Changsha (長沙)	Hankow	2.30 (green tea)	1
		2.20 (black tea)	
Siangtan (湘潭)	Hankow	2.60 (green tea)	1
		2.25 (black tea)	
Hankow	Shanghai	1.40	4

Unfired leaf is shipped to Shanghai by a class of local dealers known as *cha ke* (茶客), and is sold to firing-plants through the *cha hong* (茶行) or commission agents. Not infrequently a large firing-plant despatches its

own agents to the producing districts to undertake the purchasing and transportation of leaf. When tea is shipped to Shanghai through the *cha ke*, the process of transacting the business is as follows: When leaf arrives in Shanghai by steamer, it is first stored in the godown of the shipping company. No fee is charged for the first 15 days, but after that a charge of Tls. 0.06 a package is made for the first month and Tls. 0.04 for each succeeding month. If tea is shipped by steam-launch, it is generally stored in warehouses on landing, a charge of 15 cents per package being made. Tea stored in railway godowns remains for the first five days without charge.

Samples are taken from the consignment and handed over to the *cha hong*, which despatches brokers to solicit orders from local firing-plants. When agreement between buyers and sellers has been reached, another sample is sent to the buyers to be examined, and if the buyer finds the quality of the two samples similar, the deal is closed. Payment is made either in cash or by drafts, 2 per cent discount being allowed for cash, while drafts are generally payable in 40 days.

Four per cent commission is charged by the *cha hong* from the *cha ke* on each transaction handled, the former also profiting by any differences of weight used in buying and selling, and by expenses in loading, unloading, godown charges, and taxes. The *cha hong* sometimes act as money-lenders to the *cha ke*, and the rate of interest charged is usually 1.5 per cent *a month*.

MANUFACTURING PROCESS

Leaves are first sun-dried in the district where they are picked before being sent to Shanghai for further treatment. The first step at the factory is drying, which is done by feeding the leaves into a dryer, cylindrical in form, which rotates over a fire. This process takes from 1½ to 2 hours, and the quantity handled at each feeding is from 40 to 50 catties. Tea coming from the driers is then sorted into different grades, of whcih they are about

twelve, by passing through brass sieves of different mesh to suit the required number of grades of tea. The first mesh used separates the leaves into two kinds, long and round. Long leaves, known under the general term of *mei* (眉) or "eyebrows," are further sieved into *chen mei* (珍眉), *feng mei* (鳳眉), *ao mei* (鰲眉) and *mei yu* (眉雨); while round leaves, known under the general name of *chu* (珠) or "pearls," are further sorted according to size into *pao chu* (寶珠), *ma chu* (麻珠), *hsia mu* (蝦目), and *kung chu* (貢珠). Leaves which are neither long nor round are known as *kung hsi* (貢熙), while those which are light in weight are called *fu hsi* (副熙).

After being sieved the leaves are fanned in order to remove dust and fine particles. The smallest pieces fanned out are sold to tea-shops as *mei pien* (梅片) or *cha mo* (茶末), which means tea-dust, while the larger pieces are mixed with *kung hsi* and *fu hsi*. After fanning the leaves are sent to the picking room to have the stalks, seed, and yellow-colored leaves picked off by hand, this work being done by women.

As a certain amount of moisture is absorbed by the leaves during this treatment they are again dried, for one or two hours, and fanned. The tea is then thoroughly mixed so that a uniform quality may be obtained in the same grade, and after mixing the leaves are colored, which is done in a rotating cylinder, with different pigments used to give a lustrous color. The final process is packing in tin-lined wooden chests, which with expensive varieties is further protected by a larger outer box. The weight of each chest is carefully checked to make them uniform.

GRADES OF TEA

The tea made in Shanghai firing-houses includes both black and green. The former is usually named after the place of production, such as *chi hung* (祁紅) which is the product of Kimen (祁門), *ning hung* (寧紅), the

product of Ningchow (寧州) or Suishui (修水), *hu hung* (湖紅), the product of Hunan and Hupeh, and *wen hung* (溫紅), the product of Wenchow (溫州). The dust of black tea is known as *hua hsiang* (花香).

Of green tea there are four well-known varieties—*siao chu* (小珠) or green powder (also known as gunpowder), *ta chu* (大珠) or imperial, *hsi chun* (熙春) or hyson, and *yu chien* (雨前) or young hyson. Green powder is made by rolling the raw leaf into small spherical particles, and is divided into three varieties—No. 1 or *ma chu* (麻珠, also known as *chao mu* 蚤目), No. 2 or *pao chu* (寶珠, also known as *yi mu* 蟻目), and No. 3 or *meng chu* (芒珠, also known as *ying mu* 蠅目). Imperial is made by the same method but the pieces are larger, and is also divided into three varieties—No. 1 or *Chen Chu* (珍珠 also known as *tieh mu* 蝶目), No. 2 or *yuan chu* (圓珠, also known as *hsia mu* 蝦目), and No. 3 or *hsi chu* (熙珠, also known as *ao mu* 蛾目). Both green powder and imperial are known on the market by the common name of "Pingshui tea" (平水茶), because they are produced chiefly at Shaohing (紹興), Chekiang Province, and marketed at Pingshui, a tea trading center near Shaohing.

Hyson is manufactured from leaf picked in early spring, the three varieties being known as the *mei hsi* (眉熙) or Hyson No. 1, *cheng hsi* (正熙) or Hyson No. 2, and *fu hsi* (副熙) or Hyson No. 3. Young hyson is made from leaf picked before the *Grain Rain* festival (about April 21), and there are five varieties—*mei yu* (眉雨), *ao yu* (蛾雨), *yi yu* (蟻雨), *ya yu* (芽雨) and *hsi yu* (熙雨). Huichow (徽州), Anhui Province, is the principal producing center for hyson and young hyson.

Tea is also classified according to the season of picking. Thus *tou pan cha* (頭幫茶) or first crop tea, refers to leaf picked and manufactured before the *Grain*

Rain Festival; *er pang cha* (二幇茶) or second crop tea, to leaf picked and manufactured 10 days after the first crop tea; *san pang cha* (三幇茶) or third crop tea, to leaf picked and manufactured 20 days after the festival, and *szi pang cha* (四幇茶) or fourth crop tea, to leaf picked and manufactured about one month after. According to circumstances, tea is either known as *lu chwang cha* (路莊茶) or tea shipped to Shanghai after having been thoroughly prepared at the place of production, or *tu chuang cha* (土莊茶) tea which has been prepared in Shanghai. According to marketing places, tea is also known as *yang chuang cha* (洋莊茶) tea destined for foreign markets, and *peng chuang cha* (本莊茶), which is leaf intended for domestic markets.

PRICES

The price of tea prepared for export naturally varies according to the demand, and the following table shows the quotations for various kinds of tea current on the Shanghai market in 1932:—

	Highest	*Lowest*
Unfired Black Tea	$ 50 per picul	$20 per picul
Unfired Green Tea	$100 „ „	$25 „ „
Chen mei (珍眉)	₹200 „ chest	₹35 „ chest
Tsen mei (針眉)	₹ 70 „ „	₹25 „ „
Hsiu mei (秀眉)	₹125 „ „	₹16 „ „
Chu cha (珠茶)	₹ 90 „ „	₹45 „ „
Kung hsi (貢熙)	₹ 75 „ „	₹22 „ „
Chi hung (祁紅)	₹180 „ „	₹30 „ „
Ning hung (寧紅)	₹ 70 „ „	₹20 „ „
Hu hung (湖紅)	₹ 40 „ „	₹15 „ „
Wen hung (溫紅)	₹ 25 „ „	₹20 „ „

No accurate figures are available in regard to the quantity of tea annually marketed in Shanghai, but according to figures published by the Shanghai Bureau of Inspection and Testing of Commercial Commodities, statistics for the six months from May to October, 1932, were as follows:

product of Ningchow (寧州) or Suishui (修水), *hu hung* (湖紅), the product of Hunan and Hupeh, and *wen hung* (溫紅), the product of Wenchow (溫州). The dust of black tea is known as *hua hsiang* (花香).

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	Quantity Arriving Chests of 50 catties	Quantity Sold (Chest of 50 catties)
May	7,397	4,350
June	13,635	10,705
July	9,971	10,572
August	8,653	10,201
September	5,930	3,299
October	2,452	2,333
Total	48,038	41,460

MODE OF MARKETING

Neither *lu chuang* tea shipped to Shanghai by growers in the interior, nor *tu chwang* tea manufactured by Shanghai factories, can be directly exported abroad. All consignments intended for foreign markets must be handled by exporting firms with the *cha tsan* (茶棧) as middleman. A sample chest is first handed to the *cha tsan* by the growers or firers, who usually attach the selling price to the sample. Canvassers carrying small samples are despatched by the *cha tsan* to solicit orders from exporting firms. If the sample is found of good quality and the price is agreed upon, the transaction is concluded after approval of a second sample. The consignment is then sent from the godown to the buyer to be weighed, transportation expenses involved being borne by the seller. Payment is made in from five to 28 days after conclusion of the deal, but the money is not paid direct to the seller but through the *cha tsan*, who collects commission of 2 per cent from the seller, who also pays about a dozen miscellaneous charges, totalling about $3.50, for every chest of tea sold.

CHAPTER XXV

AERATED WATERS

THE MANUFACTURE of aerated waters was started in China about thirty years ago, the first local product on the market being Watson's mineral waters, then a British concern, but now Chinese. Although the Chinese factories manufacturing these drinks number less than ten in the whole Province, they are developing rapidly. Among the most progressive is the Eddie Aerated Water Company (益利汽水公司) which was founded in 1926 and is doing a business nearly as large as that of the old-established Watson's Mineral Water Company (屈臣氏汽水公司). Factories operated on a limited scale, however, are active only during the busy summer season, and all of them are located in Shanghai.

Modern machinery has been brought into use in the leading factories. The chief difficulty appears to lie in the shortage of locally-produced raw materials for making aerated waters and bottles that can stand the high pressure.

Watson's Mineral Water Co. and the Eddie Aerated Water Co. are the two largest Chinese concerns in this business in Kiangsu, the capital of the former amounting to $300,000, while that of the latter amounts to $40,000, both being limited liability companies. The capitalization of other concerns varies from a few hundred to several thousand dollars, and are either stock companies, partnerships, or single proprietorships, all their operations being on a very modest scale.

Among the factories using modern machinery Watson's is the best equipped, having not only plant for manufacturing aerated waters but machines for making ice. The machinery generally used in these factories includes filters, sterilizers (by ultra-violet rays), refrigerators, pumps, bottling and corking machines, etc.

Only male workers are employed, at wages ranging from $10 to $50 per month for an 8-hour day, with overtime.

RAW MATERIALS

The materials other than water used in manufacturing aerated drinks are mostly imported, the following table showing the principal sources and average prices:—

	Principal Sources	Average Prices
Fruit Juices	England, U. S.	$10 per lb.
Granulated Sugar	Japan, U. S., Netherlands	12 per picul
Bicarbonate of Soda	England, Germany	10 per box
Lemon crystals	——	2 per lb.

The metal capsules for sealing bottles are imported from England at $1.20 per gross.

OUTPUT

The aerated waters manufactured in Shanghai represent an annual production valued at about $400,000, of which the two brands, one with "W" as a trade-mark manufactured by Watson's and the other with the character "I" (益) manufactured by the Eddie Co., are the most popular.

The price of these waters is very reasonable, being about $0.85 per dozen, plus $1.20 per crate for transportation, and one cent per bottle representing luxury tax, levied by the Ministry of Finance since 1927.

CHAPTER XXVI

TOBACCO

TOBACCO industry in Kiangsu Province may be classified into two main headings, cigarette and cigar. The former, being first introduced into this country, is comparatively older and larger in scale. Kiangsu, especially the city of Shanghai, is the chief manufacturing center, but as the products are always of the inferior grade, people have to depend on imported articles for higher quality. A brief description of the industry in the Province is appended below:—

CIGARETTES

Cigarettes were first imported into this country from the United States, and in 1890 imports amounted to a couple of hundred thousand dollars only. This form of smoking rapidly became popular among the Chinese, and the total value of imported cigarettes soon increased to over Hk. Tls. 28,000,000 a year.

The first foreign cigarette factory established in China was that of the British-American Tobacco Company, a concern jointly organized by British and American enterprise and having its head office in London. This company opened a branch factory in Shanghai in 1902, and later extended its activities to Hankow, Tientsin, Shenyang (瀋陽) and Fangtze (坊子). At that time the China market was practically monopolized by the products of this Company, especially the two brands known as "Pinhead" and "Pirate."

As an indirect result of the promulgation of much stricter emigration laws in the United States, a strong movement for the encouragement of home industries was

started in China, and in 1905 a number of cigarette-factories were established by Chinese promoters. The most important were the Fu Chi (復記), Newchwang, Ta Chang (大象), Peiping, Pei Yang (北洋), Tientsin, Nan Yang (南洋), Canton, and San Hsing (三星) and Teh Lung (德隆), Shanghai. Owing to financial difficulties and to the keen competition of foreign products, these companies suspended operations after a short period. The Nan Yang Company of Canton was reorganized in 1908 by the Kam brothers, and the new concern was named the Nanyang Brothers Tobacco Company. It was not until 1916, two years after the outbreak of the World War and the consequent decline in the importation of foreign cigarettes, that Nanyang Brothers took the decisive step of establishing a factory in Shanghai, and since then the products of this company have extended their market to the most remote corners of the Republic.

After the "May 30 incident" in Shanghai in 1925 the foreign boycott movement created a general feeling among the masses that it was unpatriotic to smoke foreign cigarettes, and during the three years 1925-1927 there sprang up a host of small Chinese cigarette-factories, the numbers increasing from 14 in 1924 to 51 in 1925, to 105 in 1926, and to 182 in 1927. Among these concerns, those with comparatively large capital were the Hua Ching (華成), China and South (中南), Great Eastern (大東) and Fu Chang (福昌), while the rest had capital ranging from a few thousand dollars to twenty thousand. Strange to say, even the establishment of so many factories was insufficient to meet the demand. The Nanyang Brothers factory, which was equipped with over 100 machines and employed over 5,000 hands, was obliged to obtain assistance from other factories to meet the demand from the public, and the period of 1925-27 may be described as the "golden age" of the cigarette industry in Kiangsu Province.

After 1928, however, a gradual decline of business was witnessed, the number of factories falling from 94 in 1928 to 79 in 1929, to 65 in 1930, and to 60 at the end of Septem-

ber, 1932. This sharp slump was due first of all to the big reduction in prices of medium-grade cigarettes made by the foreign factories, a cut which the small Chinese factories found it impossible to compete with. Secondly, the high cost of raw materials which manufacturers were compelled to import them from foreign countries was a heavy blow, and lastly, the consolidated tax imposed on Chinese cigarettes further increased the cost of production. These three factories explain the decline of the Chinese cigarette industry, and the following table shows the development and decline in Kiangsu Province during the past 29 years:—

	No. of Factories		No. of Factories
1904	1	1919	9
1905	1	1920	9
1906	1	1921	9
1907	1	1922	9
1908	1	1923	10
1909	1	1924	14
1910	1	1925	51
1911	1	1926	105
1912	2	1927	182
1913	2	1928	94
1914	2	1929	79
1915	4	1930	65
1916	7	1931	64
1917	8	1932 (Sept. 30) ..	60
1918	9		

PRESENT CONDITIONS

The cigarette industry of Kiangsu may be better described as the cigarette industry of Shanghai, as all the cigarette factories in the province are situated in that city. A few years ago one factory was established in Paoshan and another in Chinkiang, but both were suspended after a short period of operation.

The factories engaged in the cigarette industry in Shanghai may be classified in three categories; (1) those equipped with manufacturing plants but making cigarettes only to order from other companies, (2) those with no manufacturing plants and whose cigarettes are made by

other companies but under their own brands, and (3) those operating manufacturing plants and making cigarettes solely for their own trade.

There are at present only two factories in the first category, the Hua Fu (華孚) and Hua Lun (華倫), with a capital of $44,000, and employing 207 hands. They are equipped with six machines, and the average output for each machine is 15,500 pieces an hour.

There were originally 241 firms in the second category, but at September 30, 1932, the number was reduced to 202, classified as follows:

Nature of Company	No. of Factories
Limited liability	145
Sole ownership	19
Partnership	14
Joint Stock	10
Unlimited liability	10
Unknown	4
Total	202

The total capitalization of these factories amounts to $1,470,100, an average of $7,150 each, distributed as follows:

Capital	No. of Factories
$500-$1,000	29
$1,001-$2,000	33
$2,001-$3,000	24
$3,001-$4,000	2
$4,001-$5,000	47
$5,001-$6,000	2
$6,001-$7,000	0
$7,001-$8,000	1
$8,001-$9,000	0
$9,001-$10,000	40
$10,001-$20,000	10
$20,001-$30,000	6
$30,001-$40,000	2
$40,001-$50,000	3

The third category, consisting of companies having factories and making cigarettes of their own brands, are 60 in number, details of which are as follows:—

Name of Factory	Factory Address	Nature of Organization	Established	Capital	No. of Workers	No. of Machines
Nanyang Brothers Tobacco Co. Ltd. (南洋)	144 East Seward Road, Shanghai	Limited Liability	1916	$10,000,000	3,591	119
Hua Shing Tobacco Co. (華興)	25 Kuenming Road, Shanghai	" "	1925	10,000	130	3
Hua Ching Tobacco Co. (華成)	Wayside Road, Shanghai	" "	1924	1,200,000	2,000	34
Hua Ching Tobacco Co. (華慶)	Shanghai	" "	1929	200,000	310	8
Hua Tung Tobacco Co. (華東)	902 Paoting Road, Shanghai	" "	1928	100,000	260	18
Hua Shen Tobacco Co. (華昇)	11 Dixwell Road, Shanghai	" "	1929	30,000	240	8
Hua Ping Tobacco Co. (華平)	91 Baikal Road, Shanghai	" "	1929	300,000	824	15
Hua Pi Tobacco Co. (華比)	33 Route Stanislas Chevalier, Shanghai	Partnership	1919	200,000	270	8
Hua Ta Tobacco Co. (華達)	11 Kinchow Road, Shanghai	Limited Liability	1927	20,000	420	8
Hua Teh Tobacco Co. (華德)	East Yuhang Road, Shanghai	" "	1927	17,000	60	6
Hua Ming Tobacco Co. (華明)	433 Rue du Marche, Shanghai	" "	1932	6,000	35	3

China & South Tobacco Co. (中南)	941 Ward Road, Shanghai	Limited Liability	1924	100,000	500	13
Chung Yuan Tobacco Co. (中原)	30 Tongshan Road, Shanghai	" "	1928	60,000	350	6
Chung Ho Tobacco Co. (中和)	40 Tongshan Road, Shanghai	" "	1926	60,000	300	6
Ta Dah Tobacco Co. (大達)	30B Tongshan Road, Shanghai	" "	1915	60,000	236	7
Ta Tung Nan Tobacco Co. (大東南)	Chin Dun Chen, Route de Siccawei, Shanghai	" "	1925	16,000	238	7
Ta Yu Tobacco Co. (大有)	291 Fuh Loh Li, Lloyd Road, Shanghai	Unlimited Liability	1931	7,500	61	3
Ta Tung Tobacco Co. (大東)	150 Kungping Road, Shanghai	Limited Liability	1925	200,000	580	8
People's Tobacco Co. (民衆)	151 East Yuhang Road, Shanghai	" "	1929	200,000	255	6
Ming Shen Sing Chi Tobacco Co. (民生新記)	A4 Tongshan Road, Shanghai	Joint Stock Company	1930	10,000	30	7
Kiang Chi Tobacco Co. (江浙)	91 Rue Bluntschli, Shanghai	Limited Liability	1928	60,000	177	5
Kiang Nan Tobacco Co. (江南)	3 Jen Chin Terrace, Ward Road, Shanghai	Sole Proprietorship	1928	30,000	272	5
Sin Yuen Tobacco Co. (信遠)	435 Yuan Chi Li, Tongshan Road, Shanghai	Limited Liability	1928	60,000	155	2

Chang Ming Tobacco Co. (昌明)	12 Winchester Road, Shanghai	Limited Liability	1928	50,000	180	5
Chang Hsin Tobacco Co. (昌興)	120 Point Road, Shanghai	„ „	1931	16,000	133	4
Ho Cheng Tobacco Co. (合成)	460 Urga Road, Shanghai	„ „	1929	50,000	90	5
San Hsin Tobacco Co. (三興)	23 Yulin Road, Shanghai	„ „	1924	40,000	450	12
Kuen Lun Tobacco Co. (崑崙)	Yung Hua Li, Rue Millot. Shanghai	„ „	1927	30,000	98	3
Yung Ho Tobacco Co. (永和)	Route Conty, Shanghai	„ „	1930	15,000	62	2
Chu Cheng Tobacco Co (聚成)	Yung Jen Li, Route de Siccawei, Shanghai	„ „	1929	20,000	43	1
Yu Hsing Tobacco Co. (裕新)	Chin An Terrace, Rue Bluntschli, Shanghai	„ „	1928	20,000	63	3
Teh Lung Tobacco Co. (德隆)	North Honan Road, Shanghai	Sole Proprietorship	1904	30,000	162	8
East Sea Tobacco Co. (東海)	25 Route Soeur Allegre Shanghai	Limited Liability	1924	10,000	65	3
Shanghai Tobacco Co. (上海)	634 East Yuhang Road, Shanghai	Sole Proprietorship	1931	420,000	170	5
Fu Chang Tobacco Co. (福昌)	10 Wuting Road, Shanghai	Limited Liability	1925	600,000	200	8
Fu Hsing Tobacco Co. (福新)	27 Yun Cheng Li, Rue du Marche, Shanghai	Sole Proprietorship	1926	50,000	222	5

Li Hsin Tobacco Co. (利興)	1364 Boone Road, Shanghai	Partnership	1912	40,000	40	5
Li Hua Tobacco Co. (利華)	2033 Lier Yin Li, East Yuhang Road, Shanghai	Limited Liability	1932	10,000	88	2
Ho Hsin Tobacco Co. (和興)	200 Tungchow Road Shanghai	Limited Liability	1925	25,000	455	13
Jui Lun Tobacco Co. (瑞倫)	Dixwell Road, Shanghai	" "	1916	40,000	250	9
Chiu Hsing Tobacco Co. (求新)	13 Yun Shung Li, Kuen-ming Road, Shanghai	" "	Not known	25,000	40	1
Seven Star Tobacco Co. (七星)	Tsepoo Road, Shanghai	" "	1931	10,000	66	2
Si Men Tobacco Co. (四門)	689 Yun Shing Road, Shanghai	" "	1929	5,000	29	1
Kuo Chang Tobacco Co. (國產)	397 Tung Sun Li, Route Lafayette, Shanghai	Unlimited Liability	1930	8,000	10	4
Wei I Pu Chi Tobacco Co. (唯一普記)	16 North Chengtu Road, Shanghai	Limited Liability	1929	50,000	70	3
Shiang Chin Tobacco Co. (香井)	Fuh Shung Terrace, Rue Brenier de Montmorand, Shanghai	Partnership	Not known	6,500	7	2
Wen Chi Lien Yi Tobacco Co. (文記聯益)	11 Sing Loh Li, Boulevard de Montigny, Shanghai	Sole Proprietorship	1932	20,000	50	2
Yu Yi Feng Chi Tobacco Co. (友益豐記)	Yun Jei Li, Route de Siccawei, Shanghai	Limited Liability	1929	20,000	30	1

Yu Lee Pao Chi Tobacco Co. (友利保記)	5 Rue Bluntschi, Shanghai	Sole Proprietorship	1926	10,000	10	2
Tsui Chun Tobacco Co. (萃純)	Ching Chang Li, Elgin Road, Shanghai	Limited Liability	1931	25,000	90	3
Hsing Ming Tobacco Co. (新民)	151 Whashing Road, Shanghai	" "	1928	120,000	122	5
Mei Dah Tobacco Co. (美達)	Yuan Ho Terrace, East Yalu Road, Shanghai	" "	1931	30,000	58	2
Mei Sin Ming Chi Tobacco Co. (美星明記)	414 Tai Yuan Li, Tsepoo Road, Shanghai	" "	1916	5,000	25	1
Tai Ping Tobacco Co. (太平)	1 Teh Tsiang Li, Tongkawan, Shanghai	" "	1931	20,000	60	4
Ning Shao Tobacco Co. (寧紹)	103 Chang Lien Li, North Thibet Road, Shanghai	" "	1932	5,000	10	1
An Li Hua Lai Chi Tobacco Co. (安利華賚記)	Tseng Ching Li, Sinza Road, Shanghai	" "	1931	10,000	Not known	4
Chin Sha Tai Chi Tobacco Co. (金沙泰記)	99 Rue Chapsal, Shanghai	Unlimited Liability	1931	20,000	82	2
Keh Fu Tobacco Co. (克富)	Baikal Road, Shanghai	Not known	1929	5,000	23	1
Chen Hua Tobacco Co. (貞華)	395-397 Route Lafayette, Shanghai	Joint Stock Company	1930	10,000	37	2
Kung Hsin Tobacco Co. (公信)	2 Macgregor Road, Shanghai	Limited Liability	1931	500,000	250	8

CAPITAL INVESTED

The capital of the Chinese cigarette factories in Kiangsu is not very substantial. Nanyang Brothers Tobacco Co. has a nominal capital of $15,000,000 (reduced to $10,000,000 recently), but actual capital is only about $1,000,000 only. The Hua Cheng Co. (華成煙草股份有限公司), despite its rapid growth since 1925, has a capital of $1,200,000 only. There is no other Chinese factory with a capital exceeding a million dollars. The total capital invested in Chinese cigarette factories in Kiangsu is estimated at $15,461,000, being only one-twentieth of the capital of the British-American Tobacco Co., and about $3,500,000 more than the China branch of that concern. The following shows the capital of the 60 Chinese cigarette factories in Kiangsu:—

	Number of Factories.
$5,000-$10,000	16
$10,001-$50,000	25
$50,001-$100,000	7
$100,001-$500,000	9
$600,000	1
$1,200,000	1
$10,000,000	1

It must be understood that the amount of capital given above is the amount registered with the Bureau of Consolidated Tax, and does not include reserves or represent the total assets. For instance, the registered capital of the Hua Ta Co. (華達公司) is $20,000, but the eight rolling-machines they have are worth more than $40,000, and their total assets are valued at $1,000,000. The registered capital of the Hua Ming (華明) and Hua Ching Companies is $6,000 and $1,200,000 respectively, but without $100,000 being invested the former could scarcely start business, and the latter concern actually has a capital of $5,000,000. Assuming that the actual capital in each case is five times the registered figure, the total capital behind the 60 Chinese cigarette factories in Kiangsu would amount to $77,301,000, or an average of $1,288,350.

MACHINERY AND OUTPUT CAPACITY

There are 429 cigarette-making machines in the 60 factories, distributed as follows:—

Machines.	Factories.
1-5	39
6-10	15
11-20	5
34	1
119	1

Regarding the make of machines, their output, and price, some details are available in the following table:—

	Machines	Output per Hour	Price of each machin
Chinese	142	15,000-30,000 pcs.	$1,900
American	260	25,000-50,000 „	G$4,850
German	27	40,000-70,000 „	G$4,850

Roughly speaking, in 12 hours 429 machines can turn out 163,074,000 cigarettes, or 3,261 boxes of 50,000 cigarettes each. It is difficult to give exact figures regarding output, for no Chinese cigarette factory works regularly, output being always adjusted to demands of the market.

WAGES AND NUMBER OF WORKERS

It is also difficult to record the number of workers engaged in the industry, which naturally varies according to the state of business. Moreover, many small factories cater only for the trade, their cigarettes bearing the trademarks and names of clients, and the majority of workers in such factories are either casual operatives or piece-rate workers who can be engaged and discharged at a moment's notice. According to a report of the Bureau of Consolidated Tax and a joint investigation made by the Ministry of Industry, Directorate-General of Budgets, Accounts and Statistics, China Economic Society, Chiao Tung University, and the Bureau of Social Affairs of the Municipality of Greater Shanghai, the number of workers employed in Chinese cigarette factories in Kiangsu in May, 1931 was as follows:—

	Number	Percentage
Male	2,560	16
Female	12,960	81
Children	480	3
Total	16,000	100

The proportion of regular workers to casual and piece-rate operatives is one to three, the former numbering only 4,000 and the latter 12,000.

The scale of wages paid is not uniform, but is largely based on experience and efficiency. The following table will give a general idea of the wages and capacity of different types of workers:—

PIECE-RATE OPERATIVES

	Workers	Wages	Daily Capacity
Paper Packet Packing (10's)	Female	$0.43-$0.60 per 1,000	30,000-15,000 cigarettes
Paper Packet Packing (20's)	Female	$0.60-$0.70 per 1,000	" " "
Cardboard Packet Packing (10's)	Female	$0.62-$0.77 per 1,000	" " "
Tin Packing	Female	$0.26-$0.66 per 150 tins	150-375 tins
Cardboard Box Making (Hand)	Female	$0.35 per 100	200 boxes
Cardboard Box Making (Machinery) ...	Female	$0.17 per 10,000	30,000 boxes.

REGULAR WORKERS

	Workers	Wage per Month
Mixing	Male and Female	$15-$30 and up
Flavoring	Male	$20-$40 and up
Cutting	Male and Female	$15-$25
Curing	Male	$20-30
Rolling	Male	$20-30
Box-making	Female	$20-30
Tin-packing	Female	$15-20 and up
Wooden-box-packing	Male	$30
Cutter-sharpening	Male	$20 and up
Carpenters and Masons	Male	$27
Mechanics	Male	$30-80

SUPPLIES OF RAW MATERIAL

Tobacco Leaf—Several Chinese provinces, notably, Shantung, Honan, and Anhui, grow tobacco of inferior quality, suitable for making cigarettes of second and third grade. High-grade cigarettes are mostly made of imported Virginia leaf, though good material is also obtained from Turkey and Egypt, which two countries, as a rule, export much less leaf than cigarettes.

Cigarette Paper—is made in rolls, and is imported in large quantities from France, Italy, the United States and Japan, the present price being from $5 to $7 per roll of 4,000 meters, sufficient for making 50,000 cigarettes.

Wax Paper—is used to wrap cigarette packets to protect the contents from moisture. So far no Chinese factory has been able to produce this article, which is imported from France, Italy, Japan, Sweden, etc. The present price per ream is about $5.50.

Cardboard—to make cigarette cases, is made in China, prices ranging from $70 to $90 per ton.

Picture-cards—These are packed in cigarette packets, and formerly were made by Japanese printers, but at present, this business is being taken over by Chinese, prices varying with size and quality—generally from $3.50 to $8 per 10,000 for small cards and from $6 to $12 for the large size.

Metal Foil—made of antimony, aluminium, tin and aluminium, or lead and aluminium, for packing cigarettes sold in paper packets, is bought from the United States and Germany at about $170 per box of 100 pounds.

Flavorings—Among the most popular flavorings used are rum, glycerine, sugar, saccharine, pineapple essence, liquorice, and honey. Saccharine comes from Germany, selling at about $10 a pound, while pineapple essence, costing from $9 to $10 a bottle, is imported from the United States.

SUPPLY AND PRICES

In the early days of the cigarette industry, the tobacco leaf used in Chinese factories consisted entirely of imported leaf from the Straits Settlements, Great Britain, and the United States. Native leaf first appeared on the market in 1913, when tobacco plants were brought from the United States to be cultivated in Anhui, Honan and Shantung. On account of a difference in the nature of soil, as well as in methods of cultivation and curing, Chinese leaf has never reached the American standard, and in making first-grade cigarettes home-grown leaf is not used. In fact, even in the cheapest brands, American leaf has to be used to the extent of 40 or 50 per cent.

Leaf from Hsuchow (許州), Honan province, is used practically in every factory, leaf grown in Tsingchow (青州), Shantung, being less popular, while that from Fengyang (鳳陽), Anhui Province, is least in demand. Details are tabulated below:

Source of Supply	Price per Picul	Annual Production (piculs)	Length of Leaf (feet)	Width of Leaf (foot)	Colour
Namyung (南雄), Kwangtung	$48	12,500	1.25	0.60	Tan with dark spots.
Chunchow (均州), Hupeh	29	3,200,000	1.33	0.50	Tan with dark spots.
Weihsien (濰縣), Shantung	41	2,500	1.44	0.62	Light yellow.
Tsingchow (青州), Shantung	41	50,000	1.48	0.45	Brown.
Fangtze (坊子), Shantung	40	16,000,000	1.38	0.42	Tan.
Chengchow (鄭州), Honan	35	10,000	1.60	0.66	Light yellow.
Hsuchow (許州), Honan	45	35,000,000	1.48	0.47	Brown.
Siangcheng (襄城), Honan	50	25,000,000	1.38	0.57	Light yellow.
Tenghsien (鄧縣), Honan	32	3,500,000	1.14	0.57	Dark yellow.
Liufu (劉府), Anhui	50	20,000,000	1.48	0.47	Tan with dark stripes.
Fengyang (鳳陽), Anhui	22	14,000,000	1.23	0.52	Yellow.
Pengpu (蚌埠), Anhui	45	1,500	1.33	0.57	Tan.

As noted above, foreign leaf is more extensively employed than Chinese, and the following table shows the respective share of the United States, Great Britain, and Japan in the tobacco leaf trade with China during the past three years:

IMPORTED FROM	1929 Quantity. (piculs)	1929 Value. (Hk. Tls.)
U. S. A. & Colonies	882,005	26,078,401
Great Britain & Colonies	14,954	402,139
Japan & Colonies	17,562	513,492
Other countries	3,455	118,432
Total Imports	924,312	27,025,177
Net Import less Re-export	910,940	26,642,392

IMPORTED FROM	1930 Quantity. (piculs)	1930 Value. (Hk. Tls.)
U. S. A. & Colonies	905,715	31,179,206
Great Britain & Colonies	37,163	863,102
Japan & Colonies	17,562	513,493
Other countries	4,154	180,162
Total Imports	964,594	32,736,962
Net Import less Re-export	925,938	30,964,702

IMPORTED FROM	1931 Quantity (piculs)	1931 Value. (Hk. Tls.)
U. S. A. & Colonies	1,208,812	47,741,198
Great Britain & Colonies	16,840	408,834
Japan & Colonies	27,712	762,982
Other countries	3,303	146,528
Total Imports	1,256,667	49,059,542
Net Import less Re-export	1,242,070	48,451,889

It should not be overlooked that every year from 1929 to 1931, Kiangsu took over 50 per cent of the total imports, as shown by the following figures:

	1929 Quantity. (piculs)	Value. (Hk. Tls.)
Nanking	—	—
Chinkiang	—	—
Soochow	10	59
Shanghai	487,454	14,553,421
Total	487,464	14,533,480
Percentage of total imports of China	50.79	51.85

	1930 Quantity. (piculs)	Value. (Hk. Tls.)
Nanking	—	—
Chinkiang	—	—
Soochow	—	—
Shanghai	561,777	10,058,836
Total	561,777	10,058,836
Percentage of total imports of China	61.22	32.74

	1931 Quantity. (piculs)	Value. (Hk. Tls.)
Nanking	62	576
Chinkiang	11	44
Soochow	34	200
Shanghai	872,192	34,469,909
Total	872,299	34,470,729
Percentage of total imports of China	70.31	68.01

METHOD OF PURCHASING LEAF

Various arrangements are made in purchasing tobacco leaf from growers in the interior. Large concerns, such as the British-American Tobacco Co. and Nanyang Brothers have their own agents stationed in tobacco-growing districts to collect supplies when needed, while concerns like Hua Ching (華成), China & South (中南), and San Hsin (三興) send buyers once or twice a year to Honan, Shantung, etc. to make purchases. Smaller factories obtain leaf from local dealers.

Though such provinces as Kuangtung, Hopei, Shantung, Honan, and Anhui grow tobacco in fairly considerable quantities, only the following varieties are in general demand:—

Hsuchow (許州)—With a comparatively good soil, this district produces the best and most easily cured leaf among Chinese products. Fomerly, on account of bandit activities in the neighborhood, only Nanyang Brothers had regular representatives stationed in the city. Surplus stock was shipped to Shanghai for sale by express companies which functioned concurrently as brokers, charging 3 per cent commission on every transaction completed.

Instead of going to farmers direct it is the usual practice for factory agents to approach express companies whenever stocks of leaf are needed, and the latter send men to different villages to make the necessary collections. Approximate prices for the four grades of leaf sold on Hsuchow market are:—

Grade	Price per Picul
1	$64
2	50
3	39
4	28

After examination by the purchasers, the leaf thus collected is sent to packing houses, where it is packed, free of charge, in bales of 150 catties, ready for shipment. Payment is generally made by native bank orders, and the average freight from Hsuchow to Shanghai is around $15 per picul.

Tsingchow (青州)—The term "Tsingchow leaf" includes Tobacco grown along the Kiaochow-Tsinan Railway

in such districts as Fangtze (坊子), Tanchiachwang (譚家莊), Yangchiachwang (楊家莊), Sintien (辛店), Huangchipao (黃旗堡), and Erhshihlipao (二十里堡). On account of absence of purchasing, packing, and curing facilities, the British-American Tobacco Co., Nanyang Brothers, and the Hua Ching Tobacco Co. each have their own special premises so that leaf may be prepared before being shipped to Shanghai. Agents of smaller concerns, coming occasionally to the city, have to rent premises and temporarily employ workers to carry out these operations. Announcement of readiness to purchase leaf is usually made by posters, so that during the specified period farmers or brokers may submit samples and discuss prices. For the purchase of small lots local dealers are often asked to serve as temporary agents, working for a commission of 1 per cent.

Prices for uncured leaf are determined according to quality in eight different grades, ranging from $5 to $60 per 100 pounds.

The chief objection to the use of Tsingchow leaf lies in the fact that it deteriorates rapidly after picking, and for this reason local curing facilities are maintained by such concerns as the British-American, Nanyang Brothers, Hua Ching, China and South, San Hing, Fu Sin (福星), and the two Japanese firms, Beisei (米星) and Nansei (南星), the cost of curing and packing every 100 pounds of fresh leaf ranging from $2.50 to $3.50. The prepared leaf is then shipped to Shanghai via Tsingtao at a charge of $20 per 1,000 pounds.

PRODUCTION

The following table shows the monthly output of foreign and Chinese factories in Kiangsu Province during 1931:—

		FIRST GRADE		SECOND GRADE		THIRD GRADE		TOTAL	
		Quantity Cases of 50,000	Value	Quantity Cases of 50,000	Value	Quantity Cases of 50,000	Value	Quantity Cases of 50,000	Value
Jan.	Chinese	33.7	$10,110	10,208.6	$2,041,720	58,055.1	$7,256,887.5	68,297.4	$9,308,717.5
„	Foreign	766.8	230,040	7,922.5	1,584,500	28,048.0	3,506,000.0	36,737.3	5,320,540.0
Feb.	Chinese	3.0	900	3,689.7	737,940	21,681.5	2,710,187.5	25,374.2	3,457,127.5
„	Foreign	299.9	89,970	7,135.4	1,427,080	18,257.5	2,282,187.5	25,692.8	3,799,237.5
Mar.	Chinese	10.4	3,120	6,193.0	1,238,600	38,692.1	4,836,512.5	44,895.5	6,078,232.5
„	Foreign	271.4	81,420	8,107.7	1,621,540	26,596.5	3,324,562.5	34,975.6	5,027,522.5
Apr.	Chinese	17.4	5,220	7,232.0	1,446,400	26,959.8	3,369,975.0	34,209.2	4,821,595.0
„	Foreign	102.9	30,870	4,050.0	806,000	24,071.0	3,008,875.0	28,203.9	3,845,745.0
May	Chinese	12.8	3,840	6,226.6	1,245,320	25,442.9	3,180,362.5	31,682.3	4,429,522.5
„	Foreign	67.0	20,100	2,120.7	424,140	23,333.3	2,916,662.5	25,521.0	3,360,902.5
June	Chinese	3.8	1,140	7,569.4	1,513,880	31,350.8	3,918,850.0	38,924.0	5,433,870.0
„	Foreign	184.6	55,380	2,954.9	590,980	18,153.6	2,269,200.0	21,293.1	2,915,560.0
July	Chinese	7.8	2,340	7,137.5	142,750	38,866.4	4,858,300.0	46,011.7	5,003,390.0
„	Foreign	251.9	75,570	3,945.0	78,900	18,439.7	2,304,962.5	22,636.6	2,459,432.5
Aug.	Chinese	7.3	2,190	5,353.7	1,070,740	31,309.0	3,913,625.0	36,670.0	4,986,555.0
„	Foreign	150.4	45,120	3,276.4	655,280	20,961.0	2,620,125.0	24,387.8	3,320,525.0
Sept.	Chinese	7.2	2,160	6,592.6	1,318,520	37,318.8	4,664,850.0	43,918.6	5,985,530.0
„	Foreign	138.4	41,520	5,813.9	1,162,780	30,561.4	3,820,175.0	36,513.7	5,024,475.0
Oct.	Chinese	5.8	1,740	8,158.7	1,631,740	47,192.9	5,899,112.5	55,357.4	7,532,592.5
„	Foreign	722.3	216,690	5,136.4	1,627,280	30,213.8	3,776,725.0	36,072.5	6,980,905.0
Nov.	Chinese	2.0	600	8,143.3	1,628,660	38,314.5	4,788,321.5	46,459.8	6,417,572.5
„	Foreign	147.2	44,160	3,054.8	610,960	28,821.6	3,602,700.0	32,022.0	4,257,820.0
Dec.	Chinese	9.6	2,880	7,262.4	1,452,480	40,083.1	5,010,387.5	47,355.1	2,465,747.5
„	Foreign	40.2	12,060	3,539.5	707,900	28,472.9	3,559,112.5	32,052.6	4,279,072.5
Total	Chinese	120.8	44,340	83,767.5	15,468,750	435,266.9	54,407,352.5	519,155.2	69,920,442.5
„	Foreign	3,143.0	942,900	57,037.2	10,697,340	295,930.3	36,991,287.5	356,110.0	50,591,737.5

PROCESSES OF MANUFACTURE

Cigarettes are usually graded according to the quality of tabocco they contain. The lower grades are made of dark and old leaves, while higher grades are made of young leaves which are soft and light yellow in color. In a cigarette factory there is a grading department where the leaves are sorted for the making of different grades of cigarettes. After this selection the leaves are sent to a room where operatives pick out the veins and stalks, which are cut up and mixed with leaves of inferior quality to be used in making cigarettes of low grades. Meanwhile the picked leaves are sent to the flavoring department and sprinkled with honey and liquorice, or one of several other flavorings. The leaves are then carried to the cutting department and cut by machines into small strips ready for making into cigarettes, after which the tobacco is taken to the air-conditioning department where the temperature and humidity are regulated by machinery. As tobacco leaves are very brittle when dry, steam is used to prevent them from breaking easily. To much moisture, however, may cause the leaves to mould, and cold air has to be introduced to counteract the effect of the steam. When the tobacco is in proper condition it is roll into cigarettes by machinery, and to prevent mould the cigarettes are baked until thoroughly dry, and are then packed in air-tight tins or in paper packets after wrapping in white wax-paper and tin-foil.

BRANDS AND PRICES

More than 1,000 different brands of cigarettes are turned out by factories in Kiangsu. Nanyang Brothers alone market 95 different brands, and the Wah Dah Company have 57. Even the smallest factories usually make three or four brands, but most of the cigarettes manufactured by Chinese factories are of low grade. The following list shows some of the most popular brands and their wholesale prices.

Price	Brand	Manufacturers
Above $1,000 per box (50,000 pcs.)	Seven Stars (七星)	Nayang Brothers Tobacco Co.
Above $500 per box	Eureka (有力克)	Hua Ping Tobacco Co.
	Mei Lan Fang (梅蘭芳), Gold Dragon (白金龍)	
	Ta Shi (大喜)	Nanyang Brothers Tobacco Co.
	Maskee (買士干)	Shanghai Tobacco Co.
Above $300 per box	Golden Safe (金庫)	Hua Pin Tobacco Co.
	Golden Tin (金罐)	Hua Pi Tobacco Co.
	Ma Chan San (馬占山)	Fu Chang Tobacco Co.
	Yen Wang (煙王)	Chung Yuan Co.
	Good Chance (好運道)	Hua Ta Tobacco Co.
	379	Hua Ching Tobacco Co.
	New Gold Coin (新金幼)	Chang Da Tobacco Co.
	Hongkong (香港)	Yu Hsing Tobacco Co.
	Company (公司)	Jui Lun Tobacco Co.
	Morning (卯令)	Chung Ho Tobacco Co.
	Anti-theif (安的西夫)	Kuo Chai Tobacco Co.
	Holmes (福爾摩司)	Fu Hsing Tobacco Co.

	Bank (銀行)	Nanyang Brothers Tobacco Co.
	My Dear (美麗)	Hua Ching Tobacco Co.
Above $200 per box	There are about 100 brands. The most Popular ones are:	
	Great Wall (長城), Earl (伯爵)	Nanyang Brothers Tobacco Co.
	Nature (自然)	Kung Hsing Tobacco Co.
	Dragon in Cloud (雲龍)	Kuo Chai Tobacco Co.
	Maling (馬鈴)	Hua Shun Tobacco Co.
	Hua Lee (華麗)	Chung Ho Tobacco Co.
	Gold Mine (金礦)	Jui Lun Tobacco Co.
	Kinling (金陵)	Hua Ching Tobacco Co.
	Violin (紫羅林)	Hua Ta Tobacco Co.
	Hai Alai (回力球)	Hsin Yuan Tobacco Co.
	Hua Mei (華美)	Kiang Chih Tobacco Co.
	Chi Hsiang (吉祥)	China and South Tobacco Co.
	Red Cloud (紅雲)	Fu Chang Tobacco Co.
	Young Lady (名妹)	Hua Pi Tobacco Co.
	Three Sisters (三妹)	Hua Pin Tobacco Co.
	Lark Fowl (百靈鶏)	Ta Tung Nan Tobacco Co.
	Golden Rat (金鼠)	Hua Ching Tobacco Co.
	Shiang Ping (香檳)	Ta Tung Tobacco Co.
About $100 per box	There are nearly 1,000 different brands.	

)oxes ·

Roman

50.0(
175.0(

99.00
100.0(

36.00
899.00

The following table shows the distribution of cigarettes made in Kiangsu among the various provinces, boxes containing 50,000 pieces being taken as the unit:—

DISTRIBUTION

	Kiangsu	Chekiang	Anhui	Fukien	Kuangtung	Kuangsi	Hunan	Hopei	Shansi	Shantung	Honan	Shansi	Jehol	Liaoning	Kirin	Hupeh	Kiangsi	Heilungkiang	Total
July, 1931																			
1st grade	77.50	5.60	7.80	—	—	—	—	.50	—	.20	—	—	—	114.20	33.70	7.30	12.90	—	259.70
2nd grade	4,387.46	2,677.80	309.40	109.00	780.00	50.00	—	803.00	—	133.70	50.00	34.50	—	296.00	129.60	469.10	853.00	—	11,082.50
3rd grade	21,875.20	13,348.60	4,182.30	2,349.00	6,562.00	162.00	—	1,624.40	—	1,549.10	175.00	10.00	—	2,252.50	10.00	2,076.50	1,210.40	—	57,387.50
August, 1931																			
1st grade	95.60	2.40	6.00	.20	—	—	—	1.30	—	1.40	—	—	—	18.20	4.60	1.20	29.80	—	160.70
2nd grade	3,514.60	2,035.80	293.40	122.50	486.60	25.00	55.00	181.60	—	155.60	99.00	50.00	—	289.00	23.00	166.00	1,134.20	—	8,631.30
3rd grade	21,740.60	11,790.30	4,509.00	2,355.00	3,566.00	177.00	10.00	1,490.00	100.00	1,466.00	100.00	30.00	—	1,859.50	30.00	1,580.50	1,623.60	—	52,427.50
September, 1931																			
1st grade	115.70	3.20	2.20	—	—	—	2.80	1.70	—	10.20	—	—	—	3.20	3.40	2.80	.40	—	145.60
2nd grade	4,866.90	2,816.60	314.80	202.00	—	—	186.00	183.10	1.00	265.80	36.00	45.00	—	153.00	15.00	1,832.50	1,489.00	—	12,406.70
2rd grade	26,673.40	16,470.60	4,581.40	4,006.40	—	—	736.00	1,794.30	122.00	2,434.00	899.00	119.00	—	1,540.00	1.00	5,914.50	2,818.00	—	68,109.60
October, 1931																			
1st grade	557.40	9.60	2.80	—	—	—	1.20	—	—	1.60	—	—	—	58.20	.20	96.10	1.00	—	728.10
2nd grade	4,637.20	2,259.70	654.50	207.50	1,986.30	65.00	16.00	410.50	—	243.90	—	14.00	—	19.00	53.00	1,706.50	1,022.00	—	13,295.10
3rd grade	27,033.30	14,643.70	6,392.60	2,224.20	13,243.00	155.00	929.50	1,688.50	30.00	1,869.00	642.00	408.00	—	55.00	7.50	6,532.50	1,808.50	—	77,662.30
November, 1931																			
1st grade	92.00	8.60	2.40	—	—	—	—	20.80	—	—	—	—	—	—	—	25.40	—	—	149.20
2nd grade	4,228.60	2,369.00	266.70	184.90	2,117.00	240.00	—	176.30	—	143.80	56.00	5.00	—	5.40	—	1,057.90	353.70	—	11,198.30
3rd grade	25,131.70	10,319.00	5,342.50	3,303.10	11,791.00	982.00	—	1,361.50	35.00	1,719.50	291.30	150.00	28.00	432.00	—	5,366.90	1,063.00	—	67,316.10
December, 1931																			
1st grade	38.80	1.00	.40	3.80	2.40	—	—	.20	—	2.00	—	—	—	—	—	.60	.60	—	49.80
2nd grade	4,494.60	2,480.80	311.40	100.60	1,061.70	—	—	786.40	—	150.30	33.00	5.00	—	—	15.00	750.10	614.60	—	10,803.50
3rd grade	29,030.90	11,227.50	5,484.60	2,845.00	9,807.00	474.00	—	2,322.50	—	1,592.00	123.00	102.00	25.00	226.00	130.00	4,285.00	1,075.00	—	68,749.50
January,1932																			
1st grade	39.00	3.60	.20	—	—	—	10.00	2.20	—	.60	—	—	—	—	—	1.70	8.20	—	55.50
2nd grade	3,889.90	1,858.40	241.30	122.50	2,035.20	—	—	167.40	—	116.60	10.00	—	—	8.00	—	378.80	330.30	—	9,768.40
3rd grade	22,333.50	14,071.50	4,490.80	1,642.00	10,761.00	197.00	—	2,597.00	—	2,793.30	220.00	376.00	—	430.00	40.00	8,330.60	1,725.50	—	70,008.20
February, 1932																			
1st grade	17.60	4.60	.20	—	—	—	—	.20	—	.40	—	—	—	—	—	8.60	.20	—	31.80
2nd grade	3,280.60	2,778.80	188.20	102.50	621.60	—	—	419.30	—	89.80	—	—	—	—	—	596.50	147.10	—	8,224.40
3rd grade	16,668.20	14,489.50	4,685.50	863.00	4,101.50	69.00	—	571.50	—	1,704.50	—	—	—	20.00	—	5,151.40	991.00	—	4 9,315.10
March, 1932																			
1st grade	20.20	.40	—	—	—	—	—	1.00	—	—	—	—	—	—	—	—	—	—	21.60
2nd grade	1,684.30	1,254.20	65.80	—	677.00	—	3.50	490.80	—	149.30	—	2.00	7.50	1,130.00	18.00	497.50	170.80	—	6,150.70
3rd grade	24,759.70	13,749.40	4,245.40	—	8,456.50	93.00	—	3,300.00	50.00	1,895.10	98.00	55.00	45.00	542.00	—	7,379.10	2,332.50	—	67,000.70
1st grade*	217.80	34.70	10.40	67.50	16.20	—	—	60.00	—	21.00	—	30.00	—	—	—	7.60	33.90	—	499.10
2nd grade*	5,726.80	3,408.00	1,303.50	1,919.00	2,344.00	250.50	—	245.00	—	900.00	110.00	122.50	—	351.50	100.00	1,309.40	433.50	—	18,523.20
April, 1932																			
1st grade	4.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.00
1st grade*	958.70	114.00	38.90	113.80	153.00	5.00	2.50	144.50	—	70.00	1.20	—	—	256.00	37.50	193.00	85.40	—	2,173.50
2nd grade*	15,401.60	8,442.60	2,508.50	3,573.50	8,422.00	423.50	—	2,285.30	70.00	2,394.00	2.00	292.00	52.00	213.00	133.00	5,511.20	1,697.00	—	51,422.10
May, 1932																			.20
1st grade	.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2,432.60
1st grade*	839.90	111.30	60.60	55.90	43.70	5.00	3.00	384.70	—	110.20	5.60	—	—	557.00	14.00	166.70	75.00	—	49,820.90
2nd grade*	16,624.80	8,477.90	1,198.60	1,416.40	8,081.80	250.00	1.00	5,211.00	—	4,343.60	134.00	105.00	135.50	610.00	103.00	2,251.80	876.50	—	.40
June, 1932																			2,313.40
1st grade	.40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	61,348.60
1st grade*	712.10	92.10	42.30	67.80	13.60	—	—	292.00	—	162.00	15.00	5.00	—	573.00	55.50	219.20	63.00	.80	
2nd grade*	18,541.30	11,287.40	2,526.70	3,489.50	10,264.80	311.50	10.00	7,151.20	20.00	3,152.70	56.00	6.50	82.00	524.00	125.50	2,634.50	1,163.00	2.00	
Totals of Different Grades																			
1st grade	1,058.40	39.00	22.00	4.00	2.40	—	4.00	27.90	—	16.40	—	—	—	193.80	41.90	143.70	53.10	—	1,606.60
2nd grade	34,984.10	20,531.10	2,645.50	1,151.50	9,765.40	380.00	270.50	3,618.40	1.00	1,448.80	284.00	155.50	7.50	1,900.40	253.60	7,448.90	6,114.70	—	90,960.90
3rd grade	215,246.50	120,110.10	43,914.10	19,588.20	68,288.00	2,309.00	1,175.50	16,749.70	337.00	17,022.50	2,548.30	1,250.00	98.00	7,357.00	218.50	46,616.60	16,467.50	—	577,976.50
1st grade*	2,728.50	352.10	152.20	305.00	226.50	10.00	5.50	881.20	—	363.20	21.80	35.00	—	1,386.00	107.00	586.50	257.30	.80	7,418.60
2nd grade*	56,294.50	31,615.90	7,537.30	10,398.40	29,112.60	1,235.00	11.00	14,892.50	90.00	10,971.20	302.00	526.00	269.50	1,698.50	461.50	11,706.90	4,170.00	2.00	18,114.80
Total No. of Boxes	310,312.00	172,648.20	54,271.10	31,447.10	107,394.90	3,934.00	1,966.50	36,169.70	428.00	29,642.10	3,156.10	1,966.50	375.00	12,535.70	1,082.50	66,502.60	25,242.60	2.80	989,077.40

	Bank (銀行)	Nanyang Brothers Tobacco Co.
	My Dear (美麗)	Hua Ching Tobacco Co.
Above $200 per box	There are about 100 brands. The most Popular ones are:	
	Great Wall (長城), Earl (伯爵)	Nanyang Brothers Tobacco Co.
	Nature (自然)	Kung Hsing Tobacco Co.
	Dragon in Cloud (雲龍)	Kuo Chai Tobacco Co.
	Maling (馬鈴)	Hua Shun Tobacco Co.
	Hua Lee (華麗)	Chung Ho Tobacco Co.
	Gold Mine (金礦)	Jui Lun Tobacco Co.
	Kinling (金陵)	Hua Ching Tobacco Co.
	Violin (紫華林)	Hua Ta Tobacco Co.
	Hai Alai (回力球)	Hsin Yuan Tobacco Co.
	Hua Mei (華美)	Kiang Chih Tobacco Co.
	Chi Hsiang (吉祥)	China and South Tobacco Co.
	Red Cloud (紅雲)	Fu Chang Tobacco Co.
	Young Lady (名妹)	Hua Pi Tobacco Co.
	Three Sisters (三妹)	Hua Pin Tobacco Co.
	Lark Fowl (百靈鳥)	Ta Tung Nan Tobacco Co.
	Golden Rat (金鼠)	Hua Ching Tobacco Co.
	Shiang Ping (香檳)	Ta Tung Tobacco Co.
About $100 per box	There are nearly 1,000 different brands.	

oxes

House

50.00
175.00

99.00
100.00

36.00
899.00

ROLLED-TOBACCO TAX

Prior to 1915 rolled-tobacco was regarded as an ordinary commodity for consumption, and there was no special tax levied on it, the only imposts being 5 per cent Customs duty and 2½ per cent for transit dues. As promulgated on December 1, 1923, the Consolidated Tax system recognised of seven classes of cigarettes for taxation purposes, with the Consolidated Tax Bureau at Nanking as the controlling organ. The Central Bureau in October, 1930, modified this plan into three classes, further reduced to two on March 21, 1932 as shown in the following table:—

7 Class System (1928)			
Value per 50,000 cigarettes		Tax Collected	Date of Enforcement
$1,072.44	and over	$404,625	From December 1, 1928 to September 30, 1930.
729.94	„ „	258,375	
558.19		185,250	
386.44	„ „	136.500	
257.63		92.625	
128.81		53.625	
Below 128.81		229,250	

3 Class System (1931)			
Value per 50,000 cigarettes		Tax Collected	Date of Enforcement
$540.00	and over	$225.00	From October 1, 1930 to January 30, 1931.
150.00	„ „	56.00	
Below 150.00		32.00	

3 Class System (1930)			
Value per 50,000 cigarettes		Tax Collected	Date of Enforcement
$540.00	and over	$305.00	From February 1, 1931 to March 20, 1932.
150.00	„ „	81.00	
Below 150.00		39.00	

Current System			
Value per 50,000 cigarettes		Tax Collected	Date of Enforcement
$260.00	and over	$95.00	From March 21, 1932
Below 260.00		55.00	

From the green leaf to the finished product in the hands of the smoker rolled-tabacco has to bear four imposts: tax on leaf, tax on raw material, consolidated tax, and business tax. The "leaf" tax is imposed on all tobacco grown in China at $450 a picul, levies being collected at the place of production. An import duty of 14 G.U. is imposed on every picul of foreign tobacco valued at over 105 G.U., 6.90 G.U. on every picul valued over 35 G.U. but not over 105 G.U., and 2.90 G.U. on every picul valued not over 35 G.U. Imported prepared tobacco in tins or packages is subject to a duty of 50 per cent. *ad valorem*; while in bulk, 63 G.U per picul; tobacco stalk, 0.99 G.U. per picul; and tobacconists' sundries, 50 per cent. *ad valorem*. Cigarette paper on bobbins or rolls is taxed at 15 G.U. per picul (including weight or bobbin or roll), and in other forms of packing, 15 per cent *ad valorem*.

Rolled-tobacco manufactured in Kiangsu, having been subjected to consolidated tax, is exempted from export duty for distribution in Kiangsu, Chekiang and Anhui, but beyond these limits is subject to a further tax, which is refunded at the collectorate where the consolidated tax has been paid upon presentation of receipt.

COMPETITION BETWEEN CHINESE AND FOREIGN COMPANIES

Competition between Chinese and foreign tobacco companies forms the whole history of the tobacco industry in China. The foreign manufacturers have the advantage of large capital and special treaty rights, and exercise a detrimental influence on China's tobacco industry which offers little hope for the recovery of the market.

Kiangsu has experienced the present competition for in this Province a number of foreign factories entered the field with huge capital and up-to-date equipment. The total capital invested in Kiangsu alone of eight foreign factories or wholesale dealers is $42,166,000, while the Chinese factories in the same Province have capital amounting to only $15,461,000. Taking all assets into consideration, one may put the capital of foreign factories at over $400,000,000 and of Chinese at only $77,300,000.

Tobacco leaves kept long in storage make better cigarettes, but owing to insufficient funds Chinese dealers find it very difficult to buy large quantity of leaf at one time to compete with foreign firms in making better grade cigarettes. In addition to this financial difficulty, disturbances in the interior, banditry, and the keen demand for imported cigarettes are all disastrous to the domestic trade.

The total tobacco consumption per annum in China may be put at 1,500,000 cases of 50,000 cigarettes, or approximately 200 cigarettes a head, and of this total the distribution is as follows: Chinese product, 30 per cent, tobacco manufactured by foreign firms in China, 50 per cent and imported goods, 20 per cent.

China's tobacco business is further handicapped by lack of proper means of transportation. Foreign firms, particularly the British-American Tobacco Company, have many branches established at various important business centers, and this have the advantage over Chinese in regard to shipment and transportation. For instance in north China tobacco comes mainly from the branch of the British-American Tobacco Company at Tientsin, in Manchuria from Liaoning, in central China from Hankow, in east China from Shanghai, and south China from Hongkong. On the other hand Chinese tobacco manufacturers are concentrated in Shanghai and there is very little chance for domestic dealers to compete with foreigners in other parts of the country. In marketing their products Chinese often seek foreign assistance in transportation, and have to pay heavy freight charges for such services. Thus the handling of the domestic product for distribution or redistribution outside of Shanghai is also largely in the hands of foreigners.

CIGARS

The manufacture of cigars in Kiangsu Province dates back to 1902, but owing to restricted sales among the masses and the superior quality of imported cigars, this industry has not been so prosperous as the manufacture of cigarettes. During the World War and the resultant slump in the import of foreign cigars, over 20 factories

were established by Chinese in Shanghai, but most of these concerns started with only $300 or $400 capital, and the work was usually carried on by families in their own homes. These mushroom enterprises were compelled to close down after the war, when the import of foreign cigars was resumed.

During the last three years, however, owing to the unprecedented slump in the price of silver and the consequent decreased purchasing power of the Chinese people, together with the adoption of the Gold Unit system by the Customs authorities in collecting duty, the import of foreign cigars has been again checked. As a result of this, a number of cigar factories operating on a comparatively large scale have gradually come into existence, and with their improved methods of manufacturing and the low cost of production, these concerns had been doing quite a good business.

PRESENT CONDITIONS

Like the cigarette industry, cigar-making in Kiangsu is concentrated in Shanghai, and there are no factories elsewhere in the Province. Excluding two factories which suspended operations after the Sino-Japanese hostilities in Shanghai, there are 16 factories actually in operation. As cigar-making requires little machinery or other special equipment, these concerns are operated on a much smaller scale than the cigarette factories. Particulars of the 18 cigar factories in Shanghai are as follows:

	Nature of Organization.	Established.	Address.	Capital.	No. of Workers
†Yung Tai (永泰)	Limited liability	1922	659 Hongkong Road.	$500,000	220
Jen Ho (人和)	„	1902	32 Lane 280, Bubbling Well Road.	60,000	220
Yung Yih (永益)	Sole Proprietorship	1931*	1 Elgin Road.	5,000	28
Chiu Pao (成寶)	„	1923	557 Jen Teh Terrace, West Wuchang Road.	5,000	20

Note:—†Operations suspended since the Sino-Japanese hostilities.
*Year of registration with the Consolidated Tax Bureau.

Chi Chang (啟昌)	pri:torship	1918	21 Kiu Ta Street, Arsenal Road.	2,000	10
Shang Lin Chang Chi (上林泉記)	„	1930*	557 Fu Jen Terrce, East Yuhang Road.	2,000	15
Sen Chi (蓁記)	„	1930*	154 Tung Hua Terrace, Foochow Road.	1,000	17
Pao Kee (葆記)	„	1931*	107 Su Wen Terrace, Foochow Road.	1,000	10
Yu Feng Tai (裕豐泰)	„	—	3291 Hsin Teh Terrace, Point Road.	800	10
Chu Yuan (竹遠)	„	1932	Jui Feng Terrace, East Kashing Road.	600	10
Lao Yu Tai Yun Chi (老裕泰雲記)	„	1912	Tung Chang Terrace, Range Road.	500	12
†Lo Ke (樂克)	„	1931*	743 Hung Hsin Terrace, Haining Road.	500	8
Yuan Tai (源泰)	Limited liability	1931*	16 Hung An Terrace, Haining Road.	500	6
San Da (三達)	Sole proprietorship	1931*	47 Chin An Terrace, Tong Kia Wan.	400	
Li Chang (利昌)	„	1927	35 Ching Yun Terrace, North Kiangsi Road.	500	5
Yin Feng (益豐)	—	—	Hanbury Road	—	—
Yu Chi (裕記)	—	—	Hung Fu Terrace, Dent Road.	—	—
Ho Chung (合衆)	—	—	Wayside Terrace, East Broadway.	—	—

From the above table it will be seen on what a limited scale these factories operate. Taking all these concerns into consideration, it appears that the total capital invested is only about $150,000, and the number of workers not more than 500.

Eight per cent of the operatives employed in these factories are females, mainly engaged in rolling leaf, and paid on piece-work basis, varying from 8 to 70 cents per 100 cigars. Male workers are engaged in packing, and are paid from $1.30 to $1.50 for every 100 boxes packed.

The output from the various factories is not uniform, and varies with the quality of the product. The daily production for each worker is from 100 to 250 high-grade cigars, 300 to 500 of medium grade, and from 500 to 1,000 of the lowest grade. The average production of a large factory is about 6,000,000 cigars a year, and that of smaller factories rather less than 1,000,000. Taking the 18 factories together, the aggregate output is estimated at 40,000,000 cigars annually.

RAW MATERIALS

The materials used in making cigars may be briefly described as follows:

(1) Wrapping leaf.—This tobacco leaf is used for making the outer covering of the cigar. It is imported from Holland at from $120 to $650 per picul, and is therefore sometimes called "Netherlands" leaf. According to Customs returns, the import from the Netherlands of this leaf was 199 piculs, valued at Hk. Tls. 24,372 in 1929, 1,740 piculs valued at Hk. Tls. 90,106 in 1930, and 309 piculs valued at Hk. Tls. 24,444 in 1931.

(2) Filler leaf.—The tobacco used in making the filling of cigars is either imported from Manila or from Tunghsiang (桐鄉), Chekiang Province. The former is used in making high-class cigars and the latter for cheap quality cigars, medium grade being made of a mixture of the two. The price of the imported leaf ranges from $45 to $150 per picul, and the import from Manila was 3,312 piculs, valued at Hk. Tls. 42,161, in 1929, 1,166 piculs valued at Hk. Tls. 24,833 in 1930, and 2,170 piculs valued at Hk. Tls. 90,087 in 1931. The price of Tunghsiang leaf varies from $30 to $50 per picul. Recently leaf imported from Cuba, Brazil, and Java has been used.

(3) Spice, sweet wine, and alcohol.—Spices are imported from Germany, and are of three varieties, first quality being sold at $36 per pound, second at $12, and third at $7. Sweet wine is imported from France at $40 per barrel of 144 pounds. These flavorings are not used by small factories in the manufacture of cheap cigars, the most common material employed by them being alcohol.

The glue used in fastening the wrapping leaf is imported from Turkey and is known on the market as "Turkish glue." It is imported in a dry state, and fetches from $3.50 to $7.50 per pound.

Labels used for decorating cigar-boxes, inside and outside, are printed in Germany at a cost of from $100 to $250 per 1,000 sets. Recently these labels have been turned out by Chinese printers, but the paper and colored inks used must be imported. Paper cigar-bands are also imported from Germany at from $3 to $5 per 1,000.

Best quality cigars are packed in wooden boxes made of cedar wood, imported from the Straits Settlements, small boxes costing about 10 cents each, and large boxes 20 cents.

MANUFACTURING PROCESS

A few of the larger factories are partly equipped with machinery, but cigars produced in the small factories are entirely made by hand. The leaves are first split in two and the stalks and veins removed before being mixed with flavoring and steamed for a few hours, after which the leaves are dried, ready to be rolled by hand. The crude cigars are trimmed at one or both ends before going to the sorting department, where cigars found to be out of shape are returned to be re-rolled, others being pressed and baked to remove the humidity remaining in them. After being thoroughly baked they are packed in wooden boxes or paper packages and are ready for the market.

Cigars are packed in different ways according to quality. The best cigars are packed in wooden boxes of 25, 50, and 100, while medium quality cigars are wrapped in paper packages of 100. Small-sized cigars of the better quality are also put up in paper packets of 10, and those of inferior quality in paper wrappings containing 100.

Cigars are made with either round, pointed, or flat ends. Both the round and pointed varieties have the opposite ends flattened, while the flat-end variety in shape resembles a large cigarette. Generally speaking, large size cigars are made either with round or pointed ends, while the small sizes are usually of the flat-end variety.

BRANDS AND PRICES

There are over 100 brands of cigars on the market produced by the various Shanghai factories. Particulars of some of the most popular brands are as follows:

Factory	Brand	Nature of Packing	Price per 1,000
Chi Chang	Golden Tip (Torpedo)	20's, 50's & 100's.	$15.00
„	White Swan	10's	4.50
„	A and A	50's	——
Lo Ko	Golden Dog (Point-end)	100's	8.00
„	„ „ (Flat-end)	„	7.50
„	„ „ („ „ small)	„	4.00
„	„ „ (Victoria)	50's	14.00
„	The Dogs Head (small size)	100's	4.00
„	„ „ „ (Londres, flat & pointed ends).	„	8.50
„	„ „ „ (Flat-end, small)	„	5.00
„	„ „ „ („ , large)	„	16.00
„	„ „ „ (Victoria)	50's	16.50
„	„ „ „ (Small Holland)	„	17.00
„	„ „ „ (Small Londres)	„	15.00
„	„ „ „ (Coronas)	100's	24.00
„	„ „ „ (New Hambra,		

	large)	25's	32.00
Lo Ko	The Dogs Head (New Hambra, small)	„	30.00
Yung Yih	The Sisters (Coronas)	50's & 25's	34.00
„	Dance Girl (Victoria)	„	14.00
„	Regaria	50's	8.00
Yu Feng Tai	Flower Flag	25's	28.00
„	Shin Mei (什美)	50's	15.00
„	Lu Sung Mei (呂宋美)	100's	11.00
„	Pei Lou Tou (白老頭)	50's	14.00
„	Hung Mei Nu (紅美女)	100's	13.00
Yu Chi	Reward (Londres)	100's	8.00
„	„ (Hambra)	25's	24.00
Yuan Tai	Foreign Girl (Hambra & Victoria)	25's & 50's	16.00
„	„ „ (Londres)	100's	8.00
„	„ „ (Londres, 3rd)	„	7.00
„	„ „ (Small)	„	5.00
„	Chang Mei (章美, Hambra and Victoria)	25's & 50's	16.00
„	„ „ (Londres)	100's	7.00
Jen Ho	Flor de Ancoras	25's	10.00
„	Princess	„	42.00
„	Mark Twain	50's	27.00
„	Don Regosto	100's	26.00
„	El Vencedor	25's	110.00
„	Emporium	100's	27.50
„	La Partura	„	25.00

CONSUMPTION FIGURES

Although cigars are not so popular among Chinese smokers as cigarettes, the slump in silver has led to a decreased import of cigars, owing to their increased cost, while the consumption of Chinese cigars has been steadily increasing. According to statistics compiled by the Consolidated Tax Bureau, the consumption in 1929 was 33,620,000, valued at $940,000; in 1930, 37,350,000 valued at $1,040,000; in 1931, 41,500,000 valued at $1,160,000, the estimated figures for 1932 being 27,000,000 valued at $702,000. The following table shows the quantity (in pieces) of Chinese cigars consumed during 1931:

	Grade "A"	Grade "B"	Grade "C"	Grade "D"	Grade "E"	Grade "F"	Total
January	855,600	352,000	102,000	1,325,750	1,711,250	898,000	5,244,600
February	850	4,250	29,000	73,500	402,500	122,000	632,100
March	184,675	752,000	118,250	597,500	369,500	323,750	2,345,675
April	67,150	134,975	147,500	439,250	1,115,700	639,000	2,543,575
May	177,425	226,625	130,100	455,150	809,000	377,500	2,175,800
June	170,125	164,200	141,950	580,750	1,045,600	301,500	2,404,125
July	273,300	301,450	256,750	757,000	1,359,750	530,000	3,478,250
August	68,175	118,350	127,000	543,750	994,250	491,000	2,342,525
September	178,425	235,775	122,250	577,250	1,142,500	777,000	3,033,200
October	354,253	640,500	148,500	632,100	1,092,450	1,395,000	4,261,803
November	67,650	398,625	165,500	872,750	1,265,500	851,000	3,981,025
December	166,000	170,750	136,000	567,750	894,750	549,000	2,484,250
Total	2,563,628	3,499,500	1,624,800	7,422,500	12,561,750	7,254,750	34,926,928
Value	$73,122	$174,975	$40,424	$96,493	$81,932	$29,014	$1,159,956

Note: Calculated according to the tax rates.

Although the import of foreign cigars has been steadily declining, yet owing to the rise in gold prices their value showed an increase. The following table shows the import of foreign cigars during the three years ending 1931:

Import from	1929		1930		1931	
	1.000	Hk. Tls.	1,000	Hk. Tls.	1,000	Hk. Tls.
Philippine Islands	10,949	344,916	6,803	331,642	6,189	439,143
Holland & Netherlands India	2,037	65,744	1,018	53,833	383	27,732
Hongkong	1,160	33,124	816	24,044	1,124	49,071
Belgium & Luxemburg	491	15,013	336	21,107	184	6,500
U. S. A.	360	54.494	318	73,895	149	50,912
Other Countries	844	39,153	714	51,113	575	36,932
Total Import	15,841	552,444	10,000	555,634	8,604	610,290
Re-export	31	2,954	36	3,484	101	9,551
Net Import	15,810	549,488	9,964	552,150	8,503	600,731

Shanghai is also the chief consuming center for local-made cigars, absorbing more than half the total output, with a considerable amount being shipped to Hankow, Peiping, and Tientsin. Markets in the south, such as Canton and the Straits Settlements, which were once good consumers of Chinese cigars, are becoming of less importance.

TOBACCO TAXES

The import duty on imported cigars is divided into two grades, those valued at over 70 gold units per mille being subject to a duty of 65 gold units, and those valued under 70 gold units per mille are subject to a duty of 24 gold units. The consolidated tax imposed on home-made cigars is collected by the Consolidated Tax Bureau of the Ministry of Finance. Cigars which have already paid the consolidated tax are free from Customs duties and other exactions when shipped to the interior and other ports. The following table shows the taxes now levied by the Consolidated Tax Bureau:

	Value per 1,000	Tax
Grade "A"	Over $80	$62.00
Grade "B"	Over 40	31.00
Grade "C"	Over 20	15.50
Grade "D"	Over 10	7.80
Grade "E"	Over 6	4.15
Grade "F"	Under 6	3.10

CHAPTER XXVII

CHEMICALS AND PHARMACEUTICALS

THERE are not many factories in the Province engaged in the manufacture of chemicals and Western medicines. The so-called chemical industry in China embraces but a few acid factories, most of which are of such an insignificant size that they can not compare with the small establishments of the West. As herb medicine is still predominent in the interior, the manufacture of foreign drugs can by no means be carried to any extensive scale. Medical preparations used in this country are, therefore, still largely imported from abroad. The following is a brief description of the chemical and pharmaceutical industries in the Province:—

ACIDS AND SODA

In spite of the fact that acids and soda are very extensively used in every chemical industry, few factories in China are engaged in their manufacture. For many years, China has been buying soda from Great Britain and acids from Japan. The first Chinese soda factory came to existence as late as 1921, when the Pacific Alkali Co. (永利製碱公司) started operations in Tangku, near Tientsin. In Kiangsu Province the first of its kind was organized under the auspices of the Kiangnan Arsenal (江南製造局) in view of the high cost of imported acids necessary for making ammunitions. The output of acids of the arsenal, however, was so small that it could hardly meet its own need. A little later, a second acid making factory for the Province, named the Kiangsu Chemical Works (江蘇藥水廠), was projected by British interests. Handicapped by high cost of raw materials, this factory has failed to make any progress since its establishment. In 1923, the Tien Chu Ve-Tsin Manufacturing Co. (天廚味精廠), a gourmet powder making factory, came into existence in Shanghai. The large consumption and poor quality of Japanese

hydrochloric acid—which is an important solvent for making gourmet powder—gave an impetus to this new concern to operate an acid factory of its own—now known as the Tien Yuan Electro-chemical Works (天原電化廠). Pending its organization, it happened that the Far Eastern Chemical Works (海防遠東化學公司) of Haiphong, Annam, wound up affairs as a result of bankruptcy, its machinery being offered for sale. Men were then sent to Indo-China by the Tien Chu to inspect the machinery, which, being found in good condition, was bought for $80,000 and shipped to Shanghai in 1929. The factory announced its formal organization in May and registered at the Ministry of Industry in October. With a capital of $400,000, it commenced manufacture at the end of 1930, the output including hydrochloric acid, caustic soda and bleaching powder. Business prospered so remarkably that the proprietors decided to increase the capital to $600,000 in 1932.

Another concern making acids is the Kai Cheng Acid Manufacturing Co. (開成造酸公司), Shanghai, registered at the Ministry of Industry and the Ministry of War in June, 1931. The initial capital of this factory amounted to $500,000 and the manufacture started with sulphuric acid. Machinery arrived at Shanghai from abroad in autumn, 1931, but installation was very much delayed, owing first to a flood which inundated the factory site and secondly, to the Sino-Japanese military activities last spring. In consequence, the factory could not start work until October, 1932. The capital was increased to a total of $750,000.

In addition to the factories afore-mentioned, there are several others operating in Nanking and Shanghai on a small scale. These factories manufacture mostly lump soda and employ old methods, far different from those adopted by modern factories.

The total number of workers employed in acid and soda making in Kiangsu Province is 281, distributed as follows:

Tien Yuan Electro-chemical Works (2 plants)	127
Kai Cheng Acid-manufacturing Co.	96
Kai Yuan Factory (開元公司)	20
Kiangsu Chemical Works	23
Other factories	115

Children and females have no place in these factories, for here, skill and dexterity are not so much needed as strength and endurance.

The table below gives further particulars:

	Location	Capital	No. of Workers
Kai Cheng Acids Manufacturing Co.	Shanghai	$580,000	96
Tien Yuan Electro-chemical Works ..	„	600,000	127
Kiangsu Chemical Works	„	——	23
Kai Yuan	„	40,000	20
Heng Li Candle, Soap and Soda Works (亨利烟皂碱廠)	„	10,000	22
Tai Kang Soda Factory (泰康碱廠)	„	5,000	3
Li Ta (立大工廠)	„	10,000	56
Yung Ta Soda Factory (永大碱廠)	„	5,000	2
Shun Ta Soda Factory (順大碱廠)	„	3,000	3
Yung Tai Soda Factory (永泰碱廠)	„	3,000	3
Lung Mao Soda Factory (隆茂碱廠)	„	3,000	3
Yung Mao Hsiang Factory ..... (永茂祥碱廠)	„	3,000	3
Tung Mao Soap Factory ..... (同茂肥皂廠)	Nanking	5,000	16

The Kai Cheng Acids Manufacturing Co. is equipped with three lead chambers, two Gay Lussac towers, one Glover tower, one cleaning machine, 32 furnaces, two acid concentrating apparatuses and several grinding machines, while the Tien Yuan Electro-chemical Works possesses 120 electrolytic tanks, one carbonating tower, a complete set of oxi-hydrogen burners, three acid concentrating apparatuses, eight bleaching machines, and three transformers. The Kai Yuan factory is provided only with very few machines, while the lump soda factories have no modern tools at all.

RAW MATERIALS

The most important raw material for making hydrochloric acid and caustic soda is salt, which is amply produced in China in such coastal provinces as Hopei, Shantung, Kiangsu, Chekiang, Kwangtung, Kwangsi and the Three Eastern Provinces. In addition to sea salt, there is the famous well salt from Szechuan and Yunnan, pond salt from Shansi, Kansu, Tsinghai and Mongolia and

mineral salt from Hupeh and Hunan. With regard to iron pyrite, which is a necessary material for making sulphuric acid, an abundant supply is always obtainable from Hsinghua (興化) and Ningteh (甯德), Fukien province, Kweichi (貴池), Anhui province, Tungshan (通山), Chienshih (建始) and Chushan (竹山), Hupeh province, Shimen (石門), Chenhsien (郴縣), Anhua (安化) Hsianghsiang (湘鄉), Hsiangtan (湘潭) and Changning (常甯), Hunan province, Tienho (天河) and Locheng (羅城), Kwangsi province, Pingyueh (平越), Yuking (餘慶) and Szenan (思南), Kweichow province, Kuangkow (狂口) and Tsinghua (清化), Honan province, Taiyuan (太原), Shansi province, Tengcheng (澄城), Shensi province, Penchihu (本溪胡), Liaoyang (遼陽), Fenghwangcheng (鳳凰城) and Tungliaochen (通遼鎮), Liaoning province and some districts in the Chahar province. The mines, however, are all operated with primitive methods and therefore, their output is generally of inferior quality.

Another important mineral for the industry is limestone, which can be obtained in considerable quantity at Fuyang (富陽) and Changhsing (長興), Chekiang province, Tayeh (大冶) and Kwangtsi (廣濟), Hupeh province, Fangshan (房山), Wanping (宛平) and Tangshan (唐山), Hopei province, Meiling (梅嶺), and Yangtak (英德), Kwangtung province and Ihsing, Suining and Chuyung, Kiangsu Province.

It has been the scheme of the Kai Cheng Acids Manufacturing Co. to make first sulphuric acid and then nitric and hydrochloric acid. An attempt was made to develop the iron pyrite mine at Tungfungshan (銅峯山), Chuki (諸暨), Chekiang province, but the output of that mine proved to be unsatisfactory and the ore at Sienyenshan (仙巖山), Juian (瑞安) of the same province was therefore used instead. The product of this latter mine was found to contain 43 per cent of sulphur, and would have served very well for manufacturing sulphuric acid were it not for the fact that it was mainly a dust ore, not suitable for the factory's machinery. Lump ore, however, was soon discovered at Tsinghsien (青縣), Kwangtung, but owing to the remoteness of that

city from Shanghai, the shipping expenses for carrying the ore to the factory was absolutely too high. Thus, while the dust ore from Chekiang sells at $25 per ton in Shanghai, the product from Kwangtung costs at least $28. Considering the large consumption by this factory of iron pyrite—3,600 tons per year, calculated at 15 tons a day and 300 working days a year—the problem of raw material is really a serious one.

The principal material used in the Tien Yuan Electro-chemical Works consists of salt and limestone, the latter being supplied locally and its annual consumption amounting to no less than 10,000 piculs worth at present about $1.70 a picul. Salt used in this factory is brought from Yuyao (餘姚), Chekiang, for two dollars a picul (not including tax, which has been reduced to three cents a picul by a special permission of the Ministry of Finance in accordance with laws governing salt used for industrial purposes).

Small factories manufacturing lump soda and the Kai Yuan factory, which makes exclusively silicate carbonate, use soda ash in large quantities. At first, the supply of this chemical came almost entirely from the B. M. & Co., but on account of the very strict terms provided in the purchasing contracts prepared by that company as well the establishment of the Pacific Alkali Co. at Tientsin, many factories found it advantageous to use home product from the Tientsin concern, which is now able to sell approximately 40,000 piculs a year, valued at about seven taels per picul. Soda, another important raw material, however, is entirely imported from abroad to the extent of about 2,400 piculs annually, selling at present for 11 taels a picul.

PRODUCTION

The Kai Cheng produces 15 tons of sulphuric acid per day, while the Tien Yuan yields 9,000 pounds of hydrochloric acid, 3,000 pounds of bleaching powder and 84 piculs of liquid caustic soda. The output and the brands used by the different factories in Kiangsu are as follows:

	Output.	Standard.	Brands.
Kai Cheng Acids Mfg. Co.	Sulphuric acid,	66 B.	●
Tien Yuan Electro-chemical Works	Hydrochloric acid,	20 B.	⊕
	Bleaching powder,	35% pure chlorine gas	
	Solid caustic soda,	96% sodium hydroxide	
	Liquir caustic soda	45 B.	
Kiangsu Chemical Works	Sulphuric acid,	66 B.	
	Nitric acid,	48 B.	
	Hydrochloric acid	——	
Kai Yuan Factory	Silicate carbonate	——	Three Stars (三星)
Heng Li Candle, Soap and Soda Factory	Lump soda	——	Stork (鶴牌)
Tai Keng Soda Factory	〃 〃	——	Tai Keng
Li Ta Factory	〃 〃	——	Li Ta
Yung Ta Soda Factory	〃 〃	——	——
Shun Ta Soda Factory	〃 〃	——	——
Yung Tai Soda Factory	〃 〃	——	——
Lung Mao Soda Factory	〃 〃	——	——
Yung Mao Soda Factory	〃 〃	——	——
Tung Mao Soap Factory	〃 〃	——	——

During the last three years, the output of different factories was fairly large. The following is a brief estimate, based upon the data collected by the Bureau of Foreign Trade:

	Output.	1929.	1930.	1931.
Tien Yuan[1]	Hydrochloric acid	——	7,513 bottles	44,855 bottles
	Caustic soda	——	5,039 piculs	25,134 piculs
Kai Yuan[2]	Silicate carbonate	——	3,340,000 pounds	4,608,000 pounds
Other factories in Shanghai				
	Lump soda	10,400,000 catties	10,400,000 catties	10,400,000 catties
Factories in Nanking				
	Lump soda	104,000 catties	104,000 catties	104,000 catties

According to an estimate made by the Kai Cheng Acids Manufacturing Co., demand of sulphuric acid in Shanghai and vicinity aggregates approximately 45,000 boxes, containing two bottles of 100 pounds each, distributed as follows:

	Boxes.
Arsenal	24,000
Mercerizing, dyeing and weaving factories ..	7,200
Enamelware factories	6,000
Celluloid factories	2,400
Aerated water factories	3,600
Soap factories	600
Other factories	1,200

The hydrochloric acid turned out by the Tien Yuan is consumed mostly in Shanghai by gourmet powder factories, the Kiangnan Arsenal, dyeing and weaving factories and pharmaceutical factories, whereas caustic soda is extensively used in paper, soap and glass manufacture. Lump soda was formely imported in considerable quantity, but since the establishment of the Heng Li, the Li Ta, etc., Chinese production has shown such a substantial increase that it is now sufficient to replace the foreign stuff.

1. This factory commenced operations in November 1930. Hydrochloric acid weighs 60 lb. a bottle.
2. This concern was established in March, 1930. Every 640 pounds is packed into a barrel.

	Output.	Standard.	Brands.
Kai Cheng Acids Mfg. Co.	Sulphuric acid,	66 B.	●
Tien Yuan Electro-chemical Works	Hydrochloric acid,	20 B.	⊕
	Bleaching powder,	35% pure chlorine gas	
	Solid caustic soda,	96% sodium hydroxide	
	Liquir caustic soda	45 B.	
Kiangsu Chemical Works	Sulphuric acid,	66 B.	
	Nitric acid,	48 B.	
	Hydrochloric acid	——	
Kai Yuan Factory	Silicate carbonate	——	Three Stars (三星)
Heng Li Candle, Soap And Soda Factory	Lump soda	——	Stork (鶴牌)
Tai Keng Soda Factory	〃 〃	——	Tai Keng
Li Ta Factory	〃 〃	——	Li Ta
Yung Ta Soda Factory	〃 〃	——	——
Shun Ta Soda Factory	〃 〃	——	——
Yung Tai Soda Factory	〃 〃	——	——
Lung Mao Soda Factory	〃 〃	——	——
Yung Mao Soda Factory	〃 〃	——	——
Tung Mao Soap Factory	〃 〃	——	——

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Other factories in Shanghai				
	Lump soda	10,400,000 catties	10,400,000 catties	10,400,000 catties
Factories in Nanking				
	Lump soda	104,000 catties	104,000 catties	104,000 catties

According to an estimate made by the Kai Cheng Acids Manufacturing Co., demand of sulphuric acid in Shanghai and vicinity aggregates approximately 45,000 boxes, containing two bottles of 100 pounds each, distributed as follows:

	Boxes.
Arsenal	24,000
Mercerizing, dyeing and weaving factories ..	7,200
Enamelware factories	6,000
Celluloid factories	2,400
Aerated water factories	3,600
Soap factories	600
Other factories	1,200

The hydrochloric acid turned out by the Tien Yuan is consumed mostly in Shanghai by gourmet powder factories, the Kiangnan Arsenal, dyeing and weaving factories and pharmaceutical factories, whereas caustic soda is extensively used in paper, soap and glass manufacture. Lump soda was formely imported in considerable quantity, but since the establishment of the Heng Li, the Li Ta, etc., Chinese production has shown such a substantial increase that it is now sufficient to replace the foreign stuff.

1. This factory commenced operations in November 1930. Hydrochloric acid weighs 60 lb. a bottle.
2. This concern was established in March, 1930. Every 640 pounds is packed into a barrel.

Easy means of transportation between Japan and China has enabled the former country to sell acids very cheaply in Shanghai. On account of a slump in exchange, prices of Japanese sulphuric acid dropped further in 1932 from 18 to 12 taels, whereas the hydrochloric acid, from 6 to 3.50 taels. In spite of the close proximity of the Kiangsu Chemical Works to the market, its product has been undersold by Chinese concerns, which are able to produce cheaper acids through the special privilege granted to them by the Ministry of Finance of paying reduced tax for all the salt they use. With regard to soda, much has been imported from Great Britain and recently, also from Russia, though home supplies are not now impossible to obtain. The following shows imports of acids and soda into China during the three years from 1929 to 1931:

	1929 (piculs)	1930 (piculs)	1931 (piculs)
Acids	160,277	151,011	164,527
Soda ash	934,530	1,076,654	768,592
Caustic soda	190,707	219,156	200,547
Soda and Preparations of Soda	299,141	242,069	234,291

The prevailing price of soda ash in 1932 was a little more than seven taels per picul, that of caustic soda, silicate carbonate and lump soda being respectively 12 taels (per picul), 24 dollars (per barrel) and five dollars (per 130 catties). Compared with the preceding years, these were rather low prices, caused mainly by the influx of cheap Russian products.

As a rule, raw materials are bought by calling for tenders. With regard to the output, the factories usually sell it for cash in retail transactions. When selling by wholesale, a sort of contract is usually made between the transacting parties. While the seller is required to observe strictly the date of delivery provided in the contract, the buyer is often made to advance a part of the payment for the goods he has ordered.

PHARMACEUTICALS

The manufacture of pharmaceuticals in Kiangsu Province confined only to Western medicinal preparations as Chinese drugs are mostly unrefined. Western medicines were imported into China many years ago, but the business was controlled completely by foreign merchants and not until 1887 was the first Chinese pharmacy the Great China Dispensary Ltd.—established in Shanghai. Following this venture several other concerns were started, among which the most prominent were the Great Eastern Dispensary, Shanghai Dispensary, Ltd., and International Dispensary, Ltd., all purchasing and retailing Western medicines.

The first Chinese plant for manufacturing pharmaceutical preparations was opened in 1922, when the Fu Kang Pharmacy (福康西藥行) was established in Shanghai. In 1926 three other enterprises were started—the International Dispensary Works (五洲固本皂藥廠), the Chung Fah Drug Works (中法製藥廠), and the New Asiatic Chemical Works, Ltd. (新亞化學製藥股份有限公司). The Kiu Foo (九福公司) and Hai Pu (海普製藥廠) wholesale drug manufacturers started business in 1929 and 1930 respectively, and the originally German-owned Sine Laboratory Co., Ltd., has been recently transferred to Chinese ownership.

The Fu Kang and Hai Pu manufacture medical drugs and general preparations, the International Dispensary Works makes soap and medicine, the Chung Fah mainly produces toilet articles, while the New Asiatic, Sine, and Kiu Foo specialise in preparations for injection.

The pharmaceutical industry of Kiangsu is concentrated in Shanghai, and in addition to manufacturing most of these concerns also do retail business in imported patent medicines. Among factories the Chung Fah and Great China, have the largest capital amounting to $500,000. Wages are paid by time and piece rates, male workers being mostly paid on the former basis, and earning from $9 to $30 per month, while female operatives on piece-work earn from $10 to $28 a month. Detailed particulars of these manufacturing pharmacists follow:—

	Location	Organization	Capital	Workers
Chung Fah Chemists	Great Western Rd., S'hai	Limited Stock Company	$500,000	180
Great China Dispensary Works (中西製藥廠)	Foochow Road, Shanghai	,,	500,000	170
International Dispensary Works	Ziccawei, S'hai	,,	200,000	130
Kiu Foo Chemists	Burkill Road, Shanghai	,,	200,000	20
New Asiatic Chemical Works	Markham Rd., Shanghai	,,	200,000	160
Sine Laboratory Co. Ltd.	Rue Massenet, Shanghai	,,	120,000	28
Fu Kang Pharmacy	Hun Ohiao, S'hai City	All particulars unknown		
Hai Pu Pharmacy	Avenue Road, Shanghai			
Tong Shi-i & Son Co. (唐拾義父子藥廠)	Avenue Edward VII S'hai	,,	10,000	9
Chung Kuo Laboratory (中國製藥廠)	Chapei, S'hai	Partnership	10,000	12

Among the above concerns the Chung Fah is best equipped with modern machinery.

SUPPLIES OF RAW MATERIALS

Quite a large proportion of the raw materials found in the Western pharmacopoeia can be obtained in China, but the greater part of these drugs come from abroad. Among native products are *Cassia lingnea*, aniseed, pepper, liquorice, cinnamon, barley buds, camphor, rhubarb, almond, ginger, cardamoms, inferior cardamoms, *Angelica polymopha*, *Atractylis ovata*, cinnabar, antimony, and many others. The most important lines imported from abroad are quinine, caffein, grape-sugar, guaiacol, creosote, alcohol, sodium iodide, calcium iodide, calcium bromide, potassium iodide, iron arsenite, carbolic acid, boric acid, salicylic acid, silver nitrate, flowers of sulphur, codliver-oil, etc., the principal sources of supply being Japan, Germany, England, the United States, France, and the Straits Settlements.

PRODUCTION

Although the Chinese pharmaceutical industry is in its infancy, and the number of factories in operation is small, the range of production is one of great variety. Among the best-known preparations and Dr. Yale's

Stimulant Remedy, 914 Mixture, Chau Tsao Blood Tonic, made by Chung Fah; Antisputum, Stomachicum, Antidorin cholera drops, and Kiu Sin codliver-oil manufactured by the Great China: "Chilai" blood tonic, nervine pills, bronchial lozenges, uterine pills and iodona, made by the International Dispensary; febnon, tobelin, glucalcin, pacdin, camphonasin, hexamin, calii bromidium, and calii iodidum, maye by the New Asiatic factory; and calcium bromide, chloride and iodide, creosote and *guaiacol cacodylat* by the Sine factory.

Details of the annual output of these works are not available, but their production is steadily increasing, judging from the volume of business done during the last three years, set out in the following table:

	1929	1931	1931
Great China	$1,100,000	$1,300,000	$1,500,000
Chung Fah	——	——	800,000
International ...	2,560,000	3,590,000	3,760,000
Kiu Foo	——	——	300,000
New Asiatic	65,000	85,000	200,000
Sine	——	——	130,000
Ton Shi-i	10,000	12,000	10,000
Chung Kuo	——	——	60,000

MARKET

Of the medicinal preparations manufactured by these concerns about 90 per cent is sold in various parts of China, the balance going to Chinese overseas. In regard to marketing methods, manufacturers usually sell to the public through their own dispensaries in Shanghai, while in other cities retail business is done either through branches or through local shops acting as agents. In addition there is a mail-order department in most of these Shanghai enterprises for the convenience of customers living in districts not served by branches or other retailers.

CHAPTER XXVIII

HOUSEHOLD SUPPLIES

THE MANUFACTURE of household supplies in Kiangsu Province is comparatively of recent growth. The chief lines of this industry consist of coal briquettes, ice, match, and vacuum bottles. A brief description of each of the above is appended as follows:—

COAL-BRIQUETTES

Colloquially known as *mei chiu* (煤球), Chinese households make great use of briquettes or balls made of coal. The old-style method of making this fuel is very simple. Coal-dust is mixed with clay by hand and moulded into egg-shaped form, and after being dried in the sun is ready to be marketed. The pioneer firm in making this fuel is the Hua Feng Factory (華豐廠), located at Markham Road, Shanghai.

Machine-made briquettes came on the market about 1926, when Mr. O. S. Lieu (劉鴻生), a well-known industrialist in Shanghai, established the Chung Hua Coal-Briquette Company (中華煤球公司). After the establishment of this concern technical experts were despatched to Europe and America to study various phases of the industry, and upon their return in November, 1926 a factory was started at Tung Chia Tu (董家渡), Pootung (浦東) and in June the following year another factory was opened at the Chung Hua Wharf (中華碼頭), Chou Chia Tu (周家渡), Pootung. Toward the end of the year a third factory under the management of the Chung Hua Company was established at 49 Dalny Road (大連灣路), Shanghai. Realizing the profit made out of this trade other promoters came into the business, establishing the Ta Hua Company (大華公司) and Hua Cheng Company (華成公司) in 1926, and the Chung Kuo Company (中國公司) in 1927. In 1928 the Chung Hua Yi Teng Company (中華一等廠) was established (now known as the Shanghai Company (上海廠) while in the two following years the Ta Chung

Hua Company (大中華廠) and Fu Lai Company (福來廠) were established, the latter, however, having been since suspended. In 1931 the Nanyang (南洋公司) and Kuo Hua (國華公司) factories started business.

SHANGHAI FACTORIES

Recent investigation shows that out of the 15 coal-briquette factories operating in Kiangsu, the majority are established in Shanghai, names and other particulars being shown below:—

	Ownership	Capital	Staff	Workers	Machinery	Power	Location
Chung Hua, No. 1 factory (中華第一廠)	Corporation	$300,000	12	40	1 briquette machine	1 Diesel engine of 46 h. p. and 1 motor of 2 kw.	Tung Chia Tu, Pootung (浦東董家渡)
Chung Hua, No. 2 factory (中華第二廠)	Corporation	300,000	24	80	1 briquette machine set.	1 Diesel engine of 210 h. p. and 1 motor of 2 kw.	Chou Chia Tu, Pootung (浦東周家渡)
Chung Hua, No. 3 factory (中華第三廠)	Corporation	300,000	15	40	1 briquette machine set.	3 motors of 50 kw. each	40 Dalny Road (大連灣路)
Ta Chung Hua (大中華)	Partnership	50,000	8	12	1 coal dust machine, 1 transporter and 2 moulding machines	3 motors of 40 h. p. each	700 Lay Road (麗路)

Ta Hua (大華)	Partnership	10,000	6	10	1 coal-dust machine, and 1 packing machine	1 motor of 20 h. p.	963 Kuang Fu Road (光復路)
Hua Cheng (華成)	Private	5,000	3	12	1 briquette machine	1 motor of 20 h. p.	801 Lay Road (勵路)
Nanyang (南洋)	Private	2,500	3	11	2 briquette machines	2 motors of 7 h. p. each	620 Hsia Hsu Road (斜徐路)
Shanghai (上海)	Partnership	20,000	7	19	1 briquette machine	1 motor of 50 h. p	766 Hsia Hsu Road
Kuo Hua (國華)	Partnership	38,000	16	30	1 briquette machine	1 motor of 67 h. p.	West of Ping Yin Chiao, Hsia Tu Road (平陰橋西斜土路)
Chung Kuo (中國)	Partnership	——	7	—	1 briquette machine	1 motor of 67 h. p.	Hongkew (虹口)
Yuan Tung (遠東)	Partnership	50,000	8	21	1 mixing machine, 1 crushing machine and 1 moulding machine	3 motors of 59 h. p.	North Hu Tang Road, Pootung (浦東北護塘路)
Ta Chung Kuo (大中國)	Partnership	30,000	—	—	——	——	Wai Hung Chiao, Hongkew (虹口外虹橋)
Si Chang Hsieh Chi (熙昌協記)	Partnership	4,500	—	10	1 moulding machine and 1 coal-dust machine	1 motor of 13 h. p.	Ching Men, Wuhsien (吳縣金門)
Li Min (利民)	——	9,000	—	24	——	——	Feng Huang Chia, Han Hsi Gate, Nanking (南京漢西門外鳳凰街)

The Yung Hsing Company (永興廠) became the Ta Hua Company in June 1929, while the Min Sun Company (民生廠) and the Chung Hua Yi Teng Company were re-named the Nanyang Company in March, 1931 and the Shanghai Company on June 1, 1932 respectively. The business of the Yuan Tung Company (遠東廠) has been suspended for some time. The Fu Lai Company was established by Mr. H. L. Chen (程海林) in August 1930 at 820 Paoshan Road. This company was a partnership, capitalized at $4,000, and employing 11 hands, equipped with a briquette machine and two electric motors of 23 h.p. each. The output amounted to about 300 tons a month, but business has been temporarily suspended. The Ta Kuang Company (大光公司) was reorganized into the Chin Sing Company (金星公司) by its Japanese promoters some time ago. The company was a joint stock concern, equipped with two electric motors of 35 h.p. each and employing 13 operatives. The company has its premises at 15 Ichang Road, Shanghai, and has a monthly output of 80 tons, the trade-mark being *chin sing* or *"Gold Stars"* (金星) but operations have been suspended for some time. The Si Chang Hsieh Chi, located in Wuhsien, was established in October, 1928, and reorganized in April 1931.

The working day observed in these factories is 10 hours, and the highest wage paid is $60, this being given to engineers and technical experts, while other employees receive about $8 per month. The wages paid in Wuhsien are lower $5.50 being the average for an ordinary worker per month. Employers take hours, days, or a month as basis for payment, the scale varying from 53 cents to $1.50 a day according to individual skill and experience. Some companies pay piece-rate wages at about $1 a ton, in which case workers board themselves. When the company provides board the worker gets from 25 to 30 cents a ton.

METHODS OF PRODUCTION

Some factories are equipped with machinery while in others primitive methods are still used. In the former class everything is done by machine—from the crushing of coal to the delivery of the finished briquettes—while in

the other class all this work is done by hand. The material used in briquette manufacture is coal-dust mixed with loess or clay as a binder, generally in the proportions of 80 per cent dust and 20 per cent binder. The mixture is then put into moulds, and after about 15 minutes in a drying machine the briquettes are packed ready for sale.

According to recent investigation, the total production of coal briquettes in Kiangsu Province amounts to 117,000 tons and 12,000 piculs. The following figures show the production expressed in tons of various factories, together with the trade-marks:—

	Tons	Trade-Mark
Chung Hua, No. 1 Factory ..	12,000	Five Cornered Golden Star (五角金星)
Chung Hua, No. 2 Factory ..	25,000	ditto
Chung Hua, No. 3 Factory ..	14,000	ditto
Yuan Tung	5,000	2 Blue Lions
Ta Chung Hua	8,000	"Three Stars"
Ta Hua	2,000	*Ta Hua*
Hua Cheng	15,000	"Pagoda"
Nanyang	5,000	2 Blue Dragons
Shanghai	9,000	"Shanghai"
Kuo Hua	20,000	Kuo Hua
Chung Kuo	15,500	——
Ta Chung Kuo	——	——
Si Chang Hsieh Chi	12,000	——

Information given by merchants engaged in this business indicates that the actual production may be larger than here stated. For instance according to dealers, in April and May, 1931 the output from the Chung Hua Company amounted to 7,000 tons, with 10,000 tons a month from October 1931 to March, 1932. The annual production of this company is thus estimated at over 64,000 tons, an increase of 13,200 tons upon the figures appearing in the above list (three factories together). From this it may be inferred that the total annual production of coal-balls in Kiangsu Province is over 200,000 tons.

The smokeless variety of coal-balls is the best. Some companies make use of chemicals to make the fuel more readily combustible. Coal-balls specially made for use in steam-boiler furnaces and in stoves and heating furnaces are made by the Chung Hua Company and are the product of scientific research, while coal-ball for pocket-warmers

made by the Chin Chang Company (勤昌) are quite a recent innovation, and sell very largely in winter. Tar coal-balls are used mostly in factory furnaces, giving longer combustion at cheaper cost.

Coal-balls are increasingly in demand throughout the country, particularly in large cities and industrial centers, and are used instead of coal for reasons of economy. Wood fuel is no longer in general use, owing to its bulk, insufficient supplies, and unsatisfactory variation of heating qualities, whereas the standard size and quality of coal-balls makes this fuel more convenient and economical for general household use.

SUPPLIES OF MATERIAL

As stated above, anthracite coal-dust and clay are used for making coal-balls. Being of better quality than either the Chinese or Japanese products, about 100,000 tons of Hongay coal dust from Tonkin are sold in Shanghai, notwithstanding its higher price—now selling at Tls. 9.50 per ton. Clay is obtained from Wuhsien in large quantities, with a small proportion coming from Sungkiang. The use of clay in making coal-balls not only binds the coal-dust but prolongs the period of combustion.

MARKETING CONDITIONS

Of the 117,000 tons of coal-balls made in Shanghai annually about 110,000 tons are consumed locally the balance going to Ningpo, Hangchow, Kashing (嘉興), Woosung, Wuhsien, Kunshan from 200 to 800 tons going to each town annually. That so small a quantity is sold to outports is due to the fact that coal-balls are liable to become damp and give unfavorable results when so affected by water.

Coal-balls are packed in baskets, and formerly 36 baskets of 27.8 kilograms went to a ton, but in 1931 a readjustment of packages and prices was made by the newly formed Shanghai Coal-ball Sales Office (上海煤球聯合營業所) whereby each metric ton was to be packed in 32 baskets of 62.5 *shih chin* (市斤, one *shih chin*=1.10 lb.). The new system makes each basket contain 4.5 *shih chin* more than the old system. The new price is 94 cents

per basket (old system) of Chung Hua coal-balls and 4 cents less for products from the Chung Kuo, Ta Chung Kuo, Yuan Tung, and Ta Chung Hua factories.

Owing to the increasing number of factories and the general economic depression, the average price of coal-balls has dropped from $33.84 per ton in 1931 to $26.30 for the Chung Hua products. The same slump has been experienced by other factories, whose products are now sold at from $20 to $21 per ton in baskets and $17.50 unpacked, plus delivery fee of $1. The competition between various factories is now so keen that whereas the Chung Hua coal-balls used to be $4 per ton more than those from other factories, this difference has gradually diminished until recently Chung Hua fixed their price at the same level as other factories, $28 per ton and $1.70 per picul.

The Shanghai Coal-ball United Sales Office was only a co-operative organization existing between a few of the large factories. Its function was limited to unifying prices and weights and settling a few trifling questions, and was not representative of the industry as a whole. Moreover, the activities of this organization ceased after the Sino-Japanese hostilities in Shanghai in January, 1932. With the object of fixing selling prices, the Chung Kuo, Nanyang (南洋), Ta Chung Kuo, Yuan Tung, Kuo Hua, Ta Chung Hua, Hua Sheng, and Shanghai factories have formed the United Sales Office of Coal-ball Factories of Shanghai Municipality (上海煤球廠聯合營業所). Not to be left behind in responding to market changes, the Chung Hua factory adopted the same price as that announced by the United Sales Office, but the eight factories mentioned above are again contemplating the organization of the Shanghai Municipality Coal-ball Manufacturers' Association (上海市煤球業同業公會).

TRADING PROCEDURE

Coal-dust from Tonkin is sold through the Shanghai branch of the Hongay Coal Mining Company of French Indo-China (法商鴻基煤礦公司) not directly to consumers but through coal hongs. For instance, dust for the Chung Hua factory is supplied by I Hsin Tai (義興泰), the Kuo Hua and other factories by the Compagnie Optrong

(寶多洋行), while the Shanghai factory and others order supplies through the Coal Business Association (煤業同業公會). The firm of F. Hardivillers (德威洋行) is another company engaged in this business. Coal-dust is sold either on F.O.B. or C.I.F. basis, in the former case the purchaser being responsible for duty, freight, and fees for declaration at the Customs, while in the latter the seller pays these charges for the buyer. The freight on coal-dust from Tonkin to Shanghai is from $2.50 to $3 per ton, and the Customs duty is G. U. 1.015.

Clay from Wuhsien is sold through brokers in Shanghai at from $2.90 to $3.50, (excluding freight, $1) per ton, according to quality and market conditions. Except in winter, when the creek is frozen, there is no difficulty in getting supplies of clay, and there is no tax or fee levied on clay shipped from Wuhsien to Shanghai.

ICE

The art of preserving natural ice for use in the hot weather has been known to the Chinese for many years, but no ice-factory was established in Kiangsu until 1907, when the Kung Hsing (公興冰廠) commenced operations in Soochow on a very small scale with a capital of $2,000. Two other factories, Hsing Yih Chi (新協記冰廠) and Jen Chi (潤記冰廠), were organized in Shanghai a year later. After the establishment of the Republic dozens of new concerns made their appearance, until in 1931 there were more than 60 ice-works in Shanghai. Those in Chapei and Woosung, however, were burnt down during the Sino-Japanese hostilities in 1932, and the number of plants in Shanghai reduced to 47.

The first foreign factory for making ice was the Shanghai Ice and Cold Storage Co. (上海機器冰廠), a British undertaking established about 24 years ago. Subsequently Japanese merchants organized the Eastern Ice Manufacturing Co. (東方機器製冰廠) in Haining Road (海甯路), Shanghai, and the Iwo Cold Storage Co. (怡和冰廠) and the Mou Chang Ice Factory (茂昌冰廠) are among the other principal foreign concerns subsequently

started in Shanghai. Of the Chinese establishments may be mentioned the Kuang I Co. (广艺冰厂), Yah Woh Ice and Cold Storage Co. (洽和冰氣股份有限公司), Yah Lung Ice and Cold Storage Co. (洽龍冰厂), Yung Sing Ice and Cold Storage Co. (永新冰藏庫股份有限公司) and Central Cold Storage (中央冷藏厂), all of Shanghai, and the Drum Tower Cold Storage (鼓樓冰廠) and Kiu Lung Cold Storage (九龍冰廠) in Nanking. The following shows further particulars of these concerns:—

	Location	Capital	Operatives	Monthly Wages	Annual Output (tons)
Yuang I (广艺)	Shanghai	$ 36,000	6	$ 5.50-$ 9.00	2,000
Yah Woh (洽和)	„	120,000	25	16.00-22.00	2,400
Yah Lung (洽龍)	„	30,000	25	8.00-21.00	910
Yung Sing (永新)	„	100,000	30	10.00-64.00	2,600
Central (中央)	„	500,000	350	——	——
Drum Tower (鼓樓)	Nanking	70,000	—	——	2,500
Kiu Lung (九龍)	„	40,000	—	——	1,400

The storage of natural ice is a simple mattre. Selected fields are flooded in winter and in due course ice is formed, which is cut into blocks and stored in a pit or cellar, which must be filled to a proper height, the storage process being completed when the ice is covered with straw, covered in turn with a thick layer of reeds, and finally a layer of mud five or six feet thick. The entrance is blocked up to make the cellar air-tight.

The principal consumers of natural and artificial ice in Shanghai are fishing companies and fish *hong*, which use approximately more than $60,000 worth of ice every year. Restaurants, groceries, and soda-fountains are among other important buyers, consuming respectively $40,000, $20,000 and $10,000 worth of ice annually. The price of artificial ice varies with the season, ranging from seven to ten dollars per ton. Natural ice is often sold by the whole cellar, the largest costing from $800 to $900, with the smallest about $400. The retail price per 100 pounds is about 10 cents.

It is not infrequent that an ice-manufacturer farms out part or the whole output to a wholesale merchant, who is bound to pay the stipulated sum at the end of every month, whether he has been able to dispose of the ice or not. The merchant may obtained from the factory at a moment's notice any amount of ice needed, and weighing is dispensed with as 15 blocks always weigh one ton.

MATCH

Matches first made their appearance in China during the reign of Tung Chih (同治), Tsing Dynasty, when European manufactures were first introduced. In 1896 Japanese matches began to be imported, with Osaka and Kobe as the chief exporting centres. Later the Japanese, taking advantage of the privileges provided in the Treaty of Shimonoseki, established factories in certain open ports in China for the manufacture of matches to be sold in the Chinese market, than displacing a large portion of the European business.

The matches then in use were lucifers and safety matches, the former, made of yellow phosphorous, being sold most in Manchuria, and North and Central China, while the latter were generally used in Central and South China.

The Chu Chang Match Co. (聚 昌), Chungking, in Szechuan province was the first Chinese-owned factory started in this country, the Hsieh Chang (燮昌) and Ho Feng (和豐) being established subsequently in Hankow and Changsha respectively. In Kiangsu the first factory to be started was the Hsieh Chang, opened in Shanghai in 1904, but as a result of mismanagement this concern closed down in 1926. In 1910 Kiangsu had a second factory, the Yung Chang (燮昌), established in Pootung, Shanghai.

During the European War the match industry in China booming, and a large number of factories sprang up, among which were the Yung Chang in Chinkiang, Hung Sheng (鴻生) in Wuhsien, Yao Yang (耀揚) in Kiangtu, Chung Hua (中華) in Nanhui, Ho Chi (和記) in Wuchin, Tung

started in Shanghai. Of the Chinese establishments may be mentioned the Kuang I Co. (廣藝冰廠), Yah Woh Ice and Cold Storage Co. (洽和冰氣股份有限公司), Yah Lung Ice and Cold Storage Co. (洽龍冰廠), Yung Sing Ice and Cold Storage Co. (永新冰藏庫股份有限公司) and Central Cold Storage (中央冷藏廠), all of Shanghai, and the Drum Tower Cold Storage (鼓樓冰廠) and Kiu Lung Cold Storage (九龍冰廠) in Nanking. The following shows further particulars of these concerns:—

	Location	Capital	Operatives	Monthly Wages	Annual Output (tons)
Yuang I (廣藝)	Shanghai	$ 36,000	6	$ 5.50-$ 9.00	2,000
Yah Woh (洽和)	„	120,000	25	16.00-22.00	2,400
Yah Lung (洽龍)	„	30,000	25	8.00-21.00	910
Yung Sing (永新)	„	100,000	30	10.00-64.00	2,600
Central (中央)	„	500,000	350	——	——
Drum Tower (鼓樓)	Nanking	70,000	—	——	2,500
Kiu Lung (九龍)	„	40,000	—	——	1,400

The storage of natural ice is a simple mattre. Selected fields are flooded in winter and in due course ice is formed, which is cut into blocks and stored in a pit or cellar, which must be filled to a proper height, the storage process being completed when the ice is covered with straw, covered in turn with a thick layer of reeds, and finally a layer of mud five or six feet thick. The entrance is blocked up to make the cellar air-tight.

The principal consumers of natural and artificial ice in Shanghai are fishing companies and fish *hong*, which use approximately more than $60,000 worth of ice every year. Restaurants, groceries, and soda-fountains are among other important buyers, consuming respectively $40,000, $20,000 and $10,000 worth of ice annually. The price of artificial ice varies with the season, ranging from seven to ten dollars per ton. Natural ice is often sold by the whole cellar, the largest costing from $800 to $900, with the smallest about $400. The retail price per 100 pounds is about 10 cents.

It is not infrequent that an ice-manufacturer farms out part or the whole output to a wholesale merchant, who is bound to pay the stipulated sum at the end of every month, whether he has been able to dispose of the ice or not. The merchant may obtained from the factory at a moment's notice any amount of ice needed, and weighing is dispensed with as 15 blocks always weigh one ton.

MATCH

Matches first made their appearance in China during the reign of Tung Chih (同治), Tsing Dynasty, when European manufactures were first introduced. In 1896 Japanese matches began to be imported, with Osaka and Kobe as the chief exporting centres. Later the Japanese, taking advantage of the privileges provided in the Treaty of Shimonoseki, established factories in certain open ports in China for the manufacture of matches to be sold in the Chinese market, than displacing a large portion of the European business.

The matches then in use were lucifers and safety matches, the former, made of yellow phosphorous, being sold most in Manchuria, and North and Central China, while the latter were generally used in Central and South China.

The Chu Chang Match Co. (聚 昌), Chungking, in Szechuan province was the first Chinese-owned factory started in this country, the Hsieh Chang (燮昌) and Ho Feng (和豐) being established subsequently in Hankow and Changsha respectively. In Kiangsu the first factory to be started was the Hsieh Chang, opened in Shanghai in 1904, but as a result of mismanagement this concern closed down in 1926. In 1910 Kiangsu had a second factory, the Yung Chang (燮 昌), established in Pootung, Shanghai.

During the European War the match industry in China booming, and a large number of factories sprang up, among which were the Yung Chang in Chinkiang, Hung Sheng (鴻生) in Wuhsien, Yao Yang (耀揚) in Kiangtu, Chung Hua (中華) in Nanhui, Ho Chi (和記) in Wuchin, Tung

Sui (通燧) in Nantung, and Ta Hua (大華), Hua Ming (華明), Li Ming (利民) and Yu Chang (裕昌) in Shanghai. These concerns soon experienced a severe setback from the keen competition of Swedish matches, which were imported in enormous quantities, the figures increasing from less than 100,000 Haikuan taels in 1920 to Hk. Tls. 1,010,000 in 1930. Another difficulty was lack of capital and of expert knowledge of the technicalities of the business, which forced many concerns to close down.

In order to protect domestic enterprise against the dangerous situattion which was developing, three factories —the Yung Chang, Chinkiang, Chung Hua, at Nanhui and Hung Sheng, Wuhsien—were combined under the title of the China Match Co. (大中華火柴公司). Some time later the Yung Chang at Hankow joined the combine, and in May last the Yu Sheng (裕生) at Kiukiang went into the group, thus forming a consolidated enterprise against foreign competition.

The factories in Kiangsu which are financed with foreign capital number two, the Japanese-owned Sui Sheng Match Co., and the American Far Eastern Match Co. The latter was originally a branch factory established at Pootung in 1928 by the first-named concern, and was purchased by Swedish interests, but was recently transferred to the present American owners. Equipped with modern machinery, it can turn out 50,400 cases of matches per annum.

The total number of match factories operating in Kiangsu is 11, with a capital amounting to about $2,700,000 (excluding two plants, whose capital is unknown) and the number of workers is 3,000 (workers of five factories whose details are unknown). About 30 per cent are male workers and the balance children and women. Wages are paid on a monthly, daily, or piece-rate basis. Regular workers draw a monthly wage of from $18 to $60, while temporary employees get from 30 to 60 cents a day. Woman workers are engaged in making containers and are paid so much per 10,000 boxes; and earn from 40 to 80 cents daily. Detailed particulars of these plants are tabulated below:—

	Location	Organization	Capital	Workers
Yung Chang Factory, Chinkiang, China Match Co. ..... (大中華火柴公司鎮江榮昌廠)	Chinkiang	Limited Stock Company	$2,267,300	606
Hung Sheng Factory, Wuhsien, China Match Co. ..... (大中華火柴公司蘇州鴻生廠)	Wuhsien	„		879
Chung Hua Factory, Nanhui, China Match Co. ..... (大中華火柴公司南匯中華廠)	Nanhui	„		511
Yung Chang Factory, Shanghai, China Match Co. ..... (大中華火柴公司上海榮昌廠)	Pootung, S'hai	„		—
Ta Hua Match Co. (大華火柴公司)	Pootung, S'hai	„	$50,000	—
Hua Ming Match Co. (華明火柴公司)	Kiangwan, Shanghai	Partnership	60,000	—
Chung Kuo Match Co. (中國火柴公司)	Chapei, Shanghai	Limited Stock Company	120,000	150
Ming Sheng Match Co. (民生火柴公司)	Particulars unknown			
Chung Nan Match Co. (中南火柴公司)				
Tung Sui Chen Chi Match Factory (通遂振記火柴廠)	Nantung	Partnership	60,000	310
Kiang Pei Match Factory (江北火柴廠)	Tungshan	„	30,000	200
Kung Hsing Match Factory (鞏興火柴廠)	Kangyu	„	10,000	60

The manufacture of matches in these factories is partly done by hand and partly by machinery, while the smaller concerns entirely depend on manual labor. Only the American Far Eastern Match Co. operated entirely by machinery.

RAW MATERIALS

Raw materials used in making matches consist of two classes, wood and chemicals. The former is used to make containers and sticks, and the chemicals for making match-heads and the striking surface pasted on the sides of boxes. Most of the raw materials used in Chinese match factories are imported.

Poplar, pine hibiscus, "Mei Yang" (美楊) and willow are used for making match-sticks, while Oregon and Chinese pine are employed for making containers.

White poplar grows in cold climates, and the wood used in Chinese match factories comes mainly from Siberia and Hokkaido, Japan. Although these trees are abundant on the Khingan mountains in Manchuria, in north-western Shensi, central Kansu, south-western Szechuan, and in Honan, along the Lung-Hai railway, lack of transport facilities enhances the cost of freight, and consequently this large resources are as yet left neglected. The normal price of a cubic foot of white poplar from Japan is about one yen.

Pine is a light, soft wood grown in Hokkaido. Despite its inferiority in quality to white poplar, it is in great demand by Chinese factories, and the price per cubic foot is between 60 and 70 sen.

Hibiscus is harder than white poplar and pine, and is grown in Antung, Weishaho (葦沙河) and Shih-towhotze (石頭河子) in Three Eastern Provinces. Though a considerable quantity is consumed in match factories in Tientsin, Shantung, Hopei and Manchuria, it is seldom used by the factories in Kiangsu Province. Normally it sells at $1.20 per cubic foot.

"Mei Yang," grown in Antung, Kirin Province, is a soft wood of yellow color, sold at 60 or 70 sen per cubic foot.

Willow is found nearly everywhere in the south-eastern provinces. but breaks so easily that it is not used in making first-grade matches.

Chinese pine is widely grown throughout the country. Being easily worked owing to its hard quality, it is employed for making containers only, selling at $1.20 per picul.

Oregon pine comes from the United States and Canada, and is much superior in quality to Chinese pine, though not so soft. It costs from 80 to 90 sen per cubic foot.

Prior to 1915 the splints used by Chinese match-factories were all of Japanese make, as Japan operates large forests and saw-mills in the Three Eastern Provinces. In 1915 when the boycott movement against Japanese goods spread widely throughout the country, the Chinese concern of Yung Chang, Shanghai established a splint works known as Hua Chang (華昌) at Nantao, Shanghai. Following this venture several other factories were started, such as Chiu Chi (久記) and the China Match Splint Co. (大中華公司梗片廠) in Shanghai and Hsieh Lung (協隆) in Fuyang, (富陽) Chekiang Province, all established to supply the needs of factories in Kiangsu. The various grades and prices are as follows:—

	Price (per 1,000 bundles)	Pieces in a bundle
1st grade poplar splints	₹27-29	2,500
2nd grade poplar sprints	21-24	"
3rd grade poplar splints	17-19	"
Pine, or "Mei Yang" splints	21-22	"
Oregon pine sprints	0.5	10,000
Chinese pine splints	3.4	"

As China has not a sufficient supply of the chemicals used in the manufacture of matches, large quantities are imported. The following is a brief description of the more important chemicals used in the industry:—

Potassium Chloride.—This product is mainly imported from Germany.

Red Amorphous Phosphorous.—Being free from poison and volatility, this is used for the manufacture of safety matches, the principal source of supply being Germany.

Sulphur.—Most of this article comes from Italy, Japan, and the United States, though large sulphur deposits exist in Yunan, Szechuan, Jehol, and Kirin.

Manganese Dioxide.—This is found in abundance in Kiangsi, Hunan, Kuangtung, and Chekiang, and is obtainable in Shanghai.

Potassium Dichromate.—This is chiefly imported from Sweden and the United States.

Zinc Oxide.—Most of this is supplied by Japan and Germany.

Ferric Oxide.—This chemical is a Chinese product and can be obtained in Shanghai.

Antimony Trisulphide.—This is also a Chinese product, found in abundance in Hunan, Kiangsi, Kuangtung and Kuangsi.

Glass Powder.—This is very plentiful in China.

Paraffin.—A by-product of petroleum, and obtainable from the Standard Oil Co., Asiatic, and Texas petroleum companies in Shanghai.

Gum Arabic.—Imported from India.

Hide Glue.—Supplied by two Chinese factories, the Chi Chang Hsing factories (燧昌新) in Shanghai and Hankow.

Sesqui-sulphide.—Germany is the only source of this supply.

Resin.—Both the Chinese and American product is in use.

Other particulars as to the packing and price of these chemicals follow:—

	Packing	Price
Potassium Chloride	In barrels (each containing 112 lbs.)	$39 (per barrel)
Red Amorphous Phosphorous .	In cases (each containing 100 boxes and box containing 10 lbs.)	168 (per case)
Sulphur	In bags (each containg 100 lbs.)	15 (per bag)
Manganese Dioxide	In bags (each containing 224 lbs.)	110 (per ton)
Potassium Dichromate	In barrels (each containing 224 lbs.)	112 (per barrel)
Zinc Oxide	In barrels (each containing 224 lbs.)	53 (per barrel)
Ferric Oxide	In cases (each containing 112 lbs.)	21 (per case)
Antimony Trisulphide	In cases (each containing 224 lbs.)	53 (per case)
Glass Powder	In bags (each containing 100 catties)	4 (per bag)
Paraffin	In bags (each containing 105 catties)	32 (per bag)
Gum Arabic	In bags (each containing 224 lbs.)	105 (per picul)
Hide Glue	In bags	78 (per 100 lbs.)
Sesqui-sulphide		130 (per 100 lbs.)
Resin	In cases	11 to $20 (per picul)

The process of manufacture is divided into three parts—making splints and sticks, match-heads, and containers.

In the manufacture of splints and sticks the wood is sawn into planks and after being softened by steaming is planed into splints or cut into sticks. When dried, these are bound in bundles of splints containing 10,000 and of sticks containing 2,500.

In making match heads the chemicals must be properly prepared in order to form a mixture fit for tips. The sticks are then coated with paraffin and dipped into the match-head mixture after which they are taken to the drying-room. From here they are sent in due course to another department to be filled into boxes.

The making of boxes is generally done by women, the work being usually divided into two parts—making the outside and the inside container. On the outside a label bearing the name of the factory and a trademark is pasted, and on both sides phosphorous paste is put to make the striking surfaces.

Matches are packed ten boxes in a paper parcel, and 120 parcels in one package, which are again packed in cases (a single case contains six packages, while a double case contains 12), and are then ready for shipment.

PRODUCTION AND MARKETS

The matches turned out by factories in Kiangsu include the safety and sesqui-sulphide varieties. The annual output has been decreasing recently, owing to the keen competition of Swedish matches and the 1931 floods, as well as the Japanese hostilities in Shanghai in 1932. Detailed particulars of output, etc. follows:—

	Varieties	Annual Output (cases)	Trade Marks
Yung Chang Factory, Chinkiang, China Match Co.	Safety and Sesqui-sulphide of phosphorous	20,000	Yu Chiao, "Shanghai," Chia Ho, "Insurance," Three Elders.
Hung Sheng Factory, Wuhsien China Match Co.	"	14,500	Flower Picking, 5 Bats, Golden Cock, Flying Wheel, To Fu, Pagoda, Stove, Lion. Double Lion, Chi Tsiang, Tin Chun Shan.
Yung Chang Factory, Shanghai, China Match Co.	"	13,648	Double Axe, Yuan Pao, Farmer, Golden Tripod, Double Scisors.
Chung Hua Factory, Nanhui, China Match Co.	"	11,600	Man-Elephant, Old Man, 3 Cats, Peony, Bird, Moon-Rabit, Chung Hua, Double Cat, Rabit.
Ta Hua Match Co.	"	5,525	Dragon-Horse, Ta Hua, Gun, Wu Chow, 3 Stars, Red Horse, Train, Aeroplane, Song Lo, Kuo Ching, Mandarin Duck.
Hua Ming Match Co.	"	4,200	Revolution, Peacock, Winged Horse, Mountain-Girl, Cock.
Chung Kuo Match Co.	"	——	To Tze, Kon Di, "Chinkiang", Hun Kou, Hun Fu, Moon and Goose.
Tung Sui Chen Chi Match Factory	"	4,500	"Nantung," Globe, Long Shan, Unicorn, Kuan Sin, Old Coin, Ox-Head, 3 Sheep, God of Wealth.
Kiang Pei Match Factory	Safety	——	Unicorn, Yun Lun Shan.
Kung Hsing Match Factory	"	——	Pao San, Nightingale.

The output of the factories operated by the China Match Co. find good markets in the southern and central provinces along the Yangtse Valley, through agencies established in large cities such as Swatow, Foochow, Amoy, Ningpo, Nanking, and Wuhu, but the matches made in the small factories are consumed locally.

The match companies usually employ brokers on a commission basis to establish business connections with storekeepers. In other places matches are sold wholesale either through branch offices of the factories or through local stores acting as their agents, on commission.

VACUUM FLASKS

Various forms and sizes of vacuum flasks have become a Chinese necessity, both for home use and in travelling. Germany was the first country exporting flasks to China, and Shanghai, being the country's leading port, is by far the largest market. Before the Manchurian incident in September, 1931, Japan was the largest exporter of flasks to China, taking nearly 60 per cent of the total business. There were also six Japanese flask factories operating in Shanghai, each doing an annual business of about $10,000, but after the Sino-Japanese hostilities in January, 1932, all these concerns closed down, and the import figures for Japanese flasks were reduced almost to nil.

PRESENT CONDITIONS

As is the case with many other industries, Shanghai is the centre of the flask manufacturing buisiness in Kiangsu Province. The first factory to be established in the city was the Kuang Ming Electric Supply and Flask Manufacturing Factory (光明电器热水瓶厂), founded in 1925 with a capital of $180,000, and at first engaged in manufacturing lamp-shades. This facotry covers a site of about eight *mou*, and the company also maintains a business office on Hongkong Road. The vacuum flasks made by this concern bear three brands, the "Warm Heart" (熱心牌), "Red Heart" (紅心牌), and "Golden Heart" (金心牌), and are made in three sizes, containing 2½, 2 and 1½ pints. They are the best of Chinese-made flasks, and their market extends to the Straits Settlements.

After the establishment of the Kuang Ming enterprise a number of small concerns sprang up in Shanghai. In

September, 1932, there were 15 flash factories in the city, of which six were established after the Sino-Japanese hostilities. Particulars of the factories are given below:

	Address	Established	Capital	No. of Workers	Nature of Output	Daily Production	Trade Mark
Kuang Ming (光明)	Ching Lung Road, Chapei (閘北青龍路)	1925	$180,000	80	Flasks and Covers	140 doz.	"Worm Heart" (蟲心牌)
Han Chang (漢 鋁)	443 Paochang Road, Chapei (閘北寶昌路)	1927	5,000	60	,,	120 ,,	"Han" (漢)
Yung Li (榮 利)	Chiang Mou Li, Paoan Road, Chapei (閘北寶安路祥茂里)	1927	5,000	35	,,	60 ,,	"Globe" (全球)
San Sin (三 星)	Chang Kang Li Albaster Road (閘北白司脫路長康里)	Aug., 1929	5,200	40	,,	80 ,,	"Three Star" (三 星)
Li Hsing (立 興)	Yung Chang Li, East Yubang Road (東有恆路榮昌里)	June, 1930	5,000	27	Covers	60 ,,	"Great Wall" (長 城)
Tien Tai (天 泰)	Lu San Li, East Yubang Road (東有恆路祿善里)	1931	...	30	,,	60 ,,	"Flying Tiger" (飛 虎)
Tung Chang (同 昌)	2 Si Tze Lung, Native City (城內九畝地獅子弄二號)	1931	2,000	25	,,	60 ,,	"Tung Hsin" (同 星)
Yu Tai Ho Chi (裕 泰 合 記)	405 Urga Road (歐嘉路四〇五號	May, 1932	3,000	28	Flasks and Covers	100 ,,	"Temple of Heaven" (天壇)
Chung Kuo (中 國)	405 Heng Pan Road, Chapei (閘北橫浜路四〇五號)	June, 1931	3,000	16	Flasks	60 ,,	.....
Chung Yiang (中 央)	.....	March 1932	2,000	...	Flasks and Covers	...	"Lion & Ball (獅球)
Pootong Factory No. 1 (浦 東 一 廠)	Ting Hsing Li, N. Szechuen Road (北四川路丁興里)	Sept., 1932	...	...	Flasks	...	.....
Chao Chin Chi (超金記)	Urga Road (歐嘉路)	...	...	...	Covers	...	"Golden Lion" (金獅)
Ta Kuang (大 光)	543 Chiao Tung Road, Chapei (閘北交通路五四三號)	Sept., 1932	...	...	,,	...	"License Barnel" (香爐)
Chin Lung (金 龍)	Kiu Keng Li, Fearon Road (愛倫路久耕里)	1932	...	...	,,	...	"Golden Dragon" (金龍)
Tung Hsing (同 興)	.....	...	...	...	...	...	.....

From the above table it will be seen that the total output of the nine older factories in Shanghai is about 26,300 dozen a month, valued at over $210,000. Taking the six later factories into consideration, the total output will aggregate about $3,000,000 per annum.

PRODUCTION

The making of vacuum flasks includes the moulding of glass bottles and making metal covers. The former are made in the same way as ordinary glass ware, botties being blown in two sizes, the small being inserted in the larger. When the air is drawn out from the space between the two bottles the entire flask is coated with mercury. A test of the vacuum flask is then made by filling with boiling water and leaving it for 24 hours. If the temperature of the contents comes up to standard the flask is packed, and made ready for sale; otherwise, it will be broken up and re-moulded.

The making of metal covers forming the outer part of the flasks is simpler. The material used is metal sheets, and the top and bottom of the cover cut out and rolled by machinery. These machines are mostly Chinese-made, the price of which varies from $60 to $300 each.

RAW MATERIALS

The most important of the materials used in the making of vacuum flasks are glass sand and mercury. The sand is found in Haifang (海防), Huichow (惠州) and Suchien, the Haifáng product being the best, selling at $24 per ton, Suchien second at $23, and Huichow third at $22. Mercury is sold by wholesale chemical stores in Shanghai. The tinplate used in making the covers is imported from Great Britain and the United States in two sizes, 14" × 20" and 36" × 72", the former being most suitable. The current price for 90 lbs. 14" × 20" plates is about Tls. 15 per box. Each sheet will make two covers, and the remaining strips are sold to toy and button makers at $8-$10 per picul. The pictorial designs on the cover are printed, and the cost of printing a nine-colored

design is 10 cents per sheet. Stoppers are manufactured by the China Cork Company (中國軟木公司) and the Shun Hsin Company (順興公司) at the cost of 13 cents for 10.

WAGES

The earnings of workers in a flask factory vary with their skill. Bottle blowers are paid from $20 to $60 per month, and the metal cover makers from $10 to $40. Coolies receive $15 a month, and apprentices $2 monthly allowance.

MARKETING

The Kuang Ming Factory products are shipped to the Straits Settlements, but the flasks produced by other factories in Shanghai supply the home markets. The wholesale price for a dozen ordinary flasks is from Tls. 7.50 to Tls. 8, while the porcelain covered flasks manufactured by the Li Hsing and Tien Tai factories cost Tls. 17 per dozen.

CHAPTER XXIX

CEMENT

CEMENT was introduced into China during the early days of foreign trade in the 19th century, but the trade was so insignificant that it was not until the late seventies the Kailan Mining Administration established a cement-works in the neighborhood of its colliery, in charge of an English engineer. This was the beginning of the cement industry in China, and after a short time the plant was sold to the Chi Hsin Cement Co. (啓新洋灰公司), a Chinese corporation.

The first cement works of importance in Kiangsu Province was that of the Shanghai Portland Cement Co. (華商水泥公司), founded by Mr. O. S. Lieu (劉鴻生) in 1921, with a capital of $1,200,000, which was increased to $1,505,100 in 1931. The factory covers an area of over 100 *mou* at Lunghua (龍華), near Shanghai, between the Whangpoo River and the Shanghai-Hangchow-Ningpo Railway.

The China Portland Cement Co. (中國水泥公司) established at Lungtan (龍潭) in August, 1921 by Yao Hsin Chi (姚新記), Shanghai building contractors, started making cement in the summer of 1924. The original capital was $1,000,000 increased in 1928 to $2,000,000, the equipment being taken over from the Tai Hu Cement Co. (太湖水泥公司), Wusih.

Both the Shanghai Portland Cement Works and the China Portland Cement Co. are joint-stock companies entirely owned by Chinese interests, the former employing 220 and the latter 404 operatives, receiving monthly wages ranging from $15 to $65. German machinery is installed at both factories.

Limestone used at the Shanghai Portland Cement Works comes from Chenwanshan (陳灣山), Huchow (湖州), Chekiang Province, some 200 miles away; clay from Zushan (佘山), Sungkiang; and gypsum from Germany. The cost of quarrying and transporting limestone to the factory is $2.60 per ton, while the price of gypsum is about $28 per ton.

Limestone and clay are plentiful in the vicinity of the China Portland Cement Co.'s works. The gypsum used is from Mexico, the price being about the same as that of the German product.

Gypsum is an important constituent of cement, for without it limestone and clay, when mixed with water, harden too rapidly. Gypsum is found in large quantities in many parts of China, the best being from Yingcheng (應城), Hupeh, where the annual production amounts to more than $1,000,000, but on account of poor transportation facilities and primitive quarrying methods, Chinese gypsum is not very largely used in cement factories in Kiangsu Province.

The Shanghai Portland Cement Co. consumes annually about 30,000 tons of clay, 108,000 tons of limestone, and 2,400 tons of gypsum, while the China Portland Cement Co. disposes of about 40,000 tons of clay, 120,000 tons of limestone, and 4,000 tons of gypsum, the consumption of coal by both factories being approximately 90,000 tons.

PRODUCTION AND MARKETING

The Shanghai Portland Cement Co. has an average output of 1,600,000 barrels, sold under the "Elephant" brand, packed in iron drums, wooden barrels, or sacks, with Kiangsu and Chekiang as the chief markets. The product of the China Portland Cement Co. is sold under the "Taishan" brand (泰山牌) in the Yangtse provinces, and consists of two qualities—Portland and "special" or "quick" cement (快泥). This concern produces about 900 barrels a day more than the Shanghai works.

Civic improvements, construction of modern public works, and the growing taste for foreign-style buildings have contributed to create an unprecedented demand for cement in recent years. Shanghai alone consumed no less than 224,000 barrels in 1932—the total would have been much larger but for the Sino-Japanese hostilities during the early part of the year. The fact, however, that Japanese cement is sold at a much lower price than the domestic product puts the Chinese factories at a very serious disadvantage.

With a view to avoiding unnecessary competition, adjusting prices, and promoting business generally, the Chi Hsin Cement Co., Tangshan, Hopei Province, the Shanghai Portland Cement Co., and the China Portland Cement Co. formed an organization under the name of the Portland Cement Association. Mutual research work and the establishment of fixed standards of quality for cement and concrete are also undertaken, and this new co-operative and progressive spirit gives hope of a bright future for the Chinese cement industry.

CHAPTER XXX

BRICKS AND TILES

THE MANUFACTURE in China of foreign-style bricks and tiles has developed rapidly with the growing number of modern buildings. The famous Chinese-style blue bricks and tiles made in Changshu, Nanhui, Nanking, Luho, Tungshan and Peihsien are not suited to modern methods of construction, as they break easily. Machine-made bricks and tiles came originally from abroad, but within recent years local products have largely replaced the imported article.

The use of foreign-style bricks and tiles in Kiangsu dates back to the regime of Emperor Kuang Hsu (1875-1908), when French red bricks and tiles were first imported into this country. The first Chinese to introduce modern brick and tile manufacturing into the Province was Mr. Yang Ssu-shun (楊斯盛), who established in 1908 the Suy Wo Brick and Tile Co., Ltd. (瑞和磚瓦公司) in Ferry Road (小沙渡路), Shanghai. In 1921 three more large factories were founded in Shanghai by local Chinese businessmen, the Hua Dah Brick and Tile Works (華大磚瓦公司), Sin Dah Machine Pressed Brick and Tile Works (信大磚瓦有限公司) and the Tai Shan Brick and Tile Co., Ltd. (泰山磚瓦有限公司). The last-named company leads in regard to size of capital and plant, having two factories, the No. 1 plant being located at Kashan (嘉善), Chekiang Province.

Among factories established outside Shanghai may be mentioned the Chen Su Brick and Tile Works (振蘇磚瓦廠) and Hua Hsing Brick and Tile Works (華興磚瓦廠), Kunshan, the Kin Hua Ti I Machine Pressed Brick and Tile Works (京華第一機製磚瓦廠) Kiangning, the Dah Chung Brick and Tile Co. (大中磚瓦股份有限公司) and Southeastern Brick and Tile Works (東南磚瓦廠), Nanhui, and the Li Nung Brick and Tile Works (利農磚瓦廠), Wusih. The following table shows particulars of the various enterprises actually in operation in the Province:

	Location.	Established.	Capital.	Operatives.	Kilns. No.	Kilns. Type.
Tai Shan, No. 2	Shanghai	1921	$250,000	677	12	American
Sin Dah	"	"	400,000	740	3	German
Hua Dah Hsing Chi (華大興記)		"	100,000	—	1	"
Dah Chung	Nanhui	1930	300,000	463	—	———
Southeastern	"	1931	40,000	68	2	American
Chen Su	Kunshan	1923	100,000	226	2	German
Kin Cheng (金城)	Kiangning	1931	110,000	166	1	"
Kin Hua Ti I	"	1929	50,000	250	2	German &
Hua (Hsin (華興)						British
Kung Dah (公大)	Wusih	——	40,000	—	—	———
Li Nung	"	——	40,000	—	—	———
Chih Chang (熾昌)	"	——	——	—	—	———
Hua Hsing (華興)	Kunshan	1923	50,000	300	1	German
Hsin Chien (新建)	"	1931	₸20,000	40	4	———
Chien Hua (建華)	Kuyung	"	$20,000	100	10	———
Yung Li (允利)	Wusih	1928	20.000	63	—	———

The majority of the operatives are paid on a daily basis. Mechanics receive from 80 cents to a dollar, while other workers receive from 30 to 60 cents. Lodging is usually provided free. Those paid on piece-work rates draw their wages from the foreman, who supplies the factory with labor on a contract basis, receiving about $100 for every 10,000 tiles and $35 to $40 for every 10,000 bricks made. Very few women are employed, as the work calls for considerable physical strength.

RAW MATERIALS

Many kinds of clay are used in making bricks and tiles. The variety known as "yellow" clay, used in making red, hollow, and blue bricks and tiles is obtainable everywhere, but Kiangyin and Ihsing yield a special kind called "purple" clay, which is good for making colored face bricks, while Wusih supplies most of the "white" clay for making paving-blocks, fire-bricks, and white face bricks.

"White" and "purple" clay are not so extensively used as the "yellow" variety, as the only factories making fire-bricks are the Tai Shan and Southeastern, while colored face bricks and paving blocks are made only in the Tai Shan.

PRODUCTION AND MARKETS

Machine-made bricks produced in Kiangsu are of six main types: paving blocks, fire-bricks, face bricks, red bricks, blue bricks, and hollow bricks. The output of the various factories in 1931 was as follows:

	Tiles. (000 omitted)	Bricks. (000 omitted)	Total Value
Tai Shan	3,000	25,000	$ 661,000
Sin Dah	1,270	23,000	463,000
Hua Dah Hsing Chi	800	8,000	98,600
Dah Chung	1,200	14,600	224,000
Southeastern	600	700	45,000
Chen Su	1,000	11,000	214,000
Kin Cheng	110	6,300	142,200
Kin Hua Ti I	60	6,000	76,200
Kung Dah	80	3,000	40,000
Li Nung	100	3,600	45,000
Chih Chang	20	800	8,000
Hua Hsin	——	3,500	42,000

Hsin Chien	——	1,550	22,750
Yung Li	——	3,000	24,000
Chien Hua	——	1,500	18,210
Total	8,240	111,550	2,123,960

The products of the Kin Cheng, Kin Hua Ti I, Hsin Chien, and Chien Hua factories are almost entirely disposed of in Nanking, and Shanghai, where hundreds of multi-storied buildings are built every year, is the principal market for output of the other 11 factories. The following shows the approximate prices of machine-made brick and tiles:

	Size.	Price per 1000
Dark and Light Shaded Face Bricks (Thin Type)	9"×2½"×1"	$ 46
ditto	4½"×2½"×1"	22
Paving Blocks	4½"×5"×9½"	110
Red Bricks	9"×4½"×2½"	10
Fire Bricks	2½"×4¼"×9"	70
Hollow Bricks:		
Four Compartments	12"×12"×8"	155
„ „	12"×12"×6"	120
„ „	12"×12"×4"	90
Six „	9¼"×9¼"×6"	65
Three „	9¼"×9¼"×4½"	55
Two „	9¼"×4½"×3"	23
Red Roofing Tiles		42
Blue „ „		50
Ridge Tiles		84

OLD-STYLE BRICKS AND TILES

Blue bricks and tiles manufactured by hand in Changshu, Nanhui, Nanking, Luho, Tungshan, and Peihsien, were famous long before the introduction of Western-style article, and are still largely produced in these districts. The kilns used are of many types, "dome-shaped," "snail-shaped," horse-shoe type, and the square type, the first being the most capacious. The process begins with the molding of clay into "biscuits," which are piled in a kiln and baked for about 24 hours. The fire is then put out and the opening of the kiln sealed for about four days, at the end of which period the finished bricks and tiles are removed.

Blue tiles sell at from $55 to $65 per 100,000 pieces, and roofing tiles at $80.

CHAPTER XXXI

HARDWARE

WITH the increasing number of ships calling at Shanghai as the volume of foreign trade expanded, there came a proportionate increase in the number of ironworks. Manufacturers of hardware are known either as *je lu* (熱爐), or *leng cho* (冷作). Hulls, boilers, chimneys, etc. are the products of the first type, while steel windows and doors, iron railings, ricksha wheels, and other goods made by forging are manufactured by the second type. After the establishment of the Republic each year saw some new hardware factories opening up, especially from 1926 to 1930. The establishment of the Hsieh Cheng Safe Factory (協成銀箱廠) in Shanghai marked the beginning of safe-making by Chinese factories, while with the establishment of the Kung Ping Steel & Iron Works (公平) and the Dah Wha Factory (大華) there came on the market Chinese-made brass bedsteads, and other domestic metalware. The Kung Chin Iron Works (公勤), and Chia Fu Nail Factory (中國嘉福廠) were the first Chinese manufacturers of nails and tacks, and the Ho Tso factory (合作) in Kiating was the pioneer in making foreign locks and keys.

TRADE CONDITIONS

Leng tso factories, as a whole, are small concerns and poorly organized, but some large *je lu* factories maintain sale offices and are well equipped. According to recent investigations there are 55 hardware manufacturing factories in Shanghai, 3 in Wuchin, 5 in Wusih, 2 in Kiangning, 4 in Tungshan and one each at Nantung, Huaiying, Tanyang and Kiating, making total of 73 in Kiangsu Province. General details are as follows:—

	Capital	Established	Operatives	Monthly Wages	Products
Dah Wha (大華鋼鐵廠)	$250,000	1923	50	$12–$80	Steel bedsteads, steel furniture, hospital instruments and equipments, steel windows and door.
Kung Ping Steel & Iron Works (公平鋼鐵廠)	50,000	1930	98	$5–$57	Stools and office furniture.
Chiu Lien (九蓮鋼鐵廠)	2,000	1931	17	$12–$20	Stools.
Chou Yü Chang (周裕昌鐵牀廠)	2,000	1925	19	$33	Iron and brass bedsteads.
Hou Chang Hsiang (候昌祥鐵牀廠)	1,600	1928	9	$8	〃 〃 〃
Chu Lung Hsing (朱隆興鐵牀廠)	1,000	1921	10	$6–$12	〃 〃 〃
Li Mao Chang (李茂昌鋼鐵牀廠)	2,500	1922	14	$6–$12	〃 〃 〃
Wu Shun Hsing (吳順興機器鐵廠)	2,000	1891	11	$20–$30	Boilers and chimnies.
Chiao I Hsing (膠義興鐵廠)	1,000	1927	10	$20–$30	〃 〃
Ch'ien Shun Hsing (錢順興鍋爐鐵廠)	2,000	1919	19	$20–$30	〃 〃 , tanks,
Kung Chin (公勤鐵廠)	100,000	1922	70	$20–$30	Nails and tacks.
Chia Fu (中國嘉福造釘廠)	50,000	1930	27	——	〃 〃
Hsin Cheng (新成鐵工廠)	10,000	1929	24	——	Pipes.
Isiang Feng (祥豐直浇鐵管廠)	10,000	1920	36	——	〃
Wong Shun Tai (王順泰鐵廠)	600	1902	15	——	Screws.
Ku Shun Chi (顧順記機器廠)	2,000	1901	5	——	〃
Hsia I Hsing (冷怡興鐵廠)	2,000	1904	22	——	〃
Chiu Ching (求精機器廠)	5,000	1918	15	——	〃

San Hsin (三星五金工廠)	1,000	1930	7	——	„ and washers.
Ku Wan Hsing (顧萬興鐵工廠)	1,000	1930	13	——	„
Shun Mao (順茂機器廠)	1,000	1922	8	——	„
Tai Fu Hsing (戴福興鐵工廠)	650	1905	20	$6–$10	Steel windows, iron doors and railing.
Chia Hsieh Chang (賈協昌鋼機廠)	2,000	1904	10	$6–$10	„ „ „
Sheng Fu Chang (沈福昌鋼鐵工廠)	6,000	1921	27	$6–$10	„ „ „
China Metal Works (中國鋼鐵工廠)	10,000	1930	20	$16–$30	„ „ „
Sheng Li (勝利鋼窗廠)	2,000	1931	8	——	„ „ „
Tsai Jen Mao (蔡仁茂鋼窗廠)	2,000	1930	6	——	„ „ „
Chung Hsing (中興鍋廠)	4,000	1929	17	$11–$30	Boilers.
Hsü Shun Hsing (徐順興鐵爐廠)	2,000	1901	30	——	„
Yu I Chang (予義昌鍋爐廠)	10,000	1911	27	$6–$17	„
Ching Chang Hsiang (經祥)	2,000	1918	21	$18–$30	„
Ch'ien Shun Hsing (錢順興鍋爐鐵廠)	1,000	1921	12	$7–$30	„
Dah Wha Shun Chi (大華順記鋼鐵五金工廠)..	10,000	1920	47	$9–$20	Taps.
Wong Ying Chang (王英昌鋼號)	3,000	1924	26	——	„
Jui Chang Shun (瑞昌順鐵器廠)	3,000	1932	23	$10–$30	„
Fu Shun K'un Chi (福順蔡記機器廠)	5,000	1926	10	$18	„
Lo Lien Chang (羅蓮昌鋼鐵機器廠)	3,000	1920	17	$10–$24	„
Hsin Ta (新大五金鋼鐵工廠)	2,000	1930	10	$6–$24	„
Cheng Yuan (正源五金鋼窗廠)	1,000	1921	13	$6–$20	„
Teng Pao Chang (鄧寶昌鋼鐵廠)	600	1926	10	$6–$16	„

	Capital	Established	Operatives	Monthly Wages	Products
Dah Wha (大華鋼鐵廠)	$250,000	1923	50	$12–$80	Steel bedsteads, steel furniture, hospital instruments and equipments, steel windows and door.
Kung Ping Steel & Iron Works (公平鋼鐵廠) ..	50,000	1930	98	$5–$57	Stools and office furniture.
Chiu Lien (九蓮鋼鐵廠)	2,000	1931	17	$12–$20	Stools.
Chou Yü Chang (周裕昌鐵牀廠)	2,000	1925	19	$33	Iron and brass bedsteads.
Hou Chang Hsiang (候昌祥鐵牀廠)	1,600	1928	9	$8	〃 〃 〃
Chu Lung Hsing (朱隆興鐵牀廠)	1,000	1921	10	$6–$12	〃 〃 〃
Li Mao Chang (李茂昌鋼鐵牀廠)	2,500	1922	14	$6–$12	〃 〃 〃
Wu Shun Hsing (吳順興機器鐵廠)	2,000	1891	11	$20–$30	Boilers and chimnies.
Chiao I Hsing (喬義興鐵廠)	1,000	1927	10	$20–$30	〃 〃
Ch'ien Shun Hsing (錢順興鍋爐鐵廠)	2,000	1919	19	$20–$30	〃 〃 , tanks,
Kung Chin (公勤鐵廠)	100,000	1922	70	$20–$30	Nails and tacks.
Chia Fu (中國嘉福造釘廠)	50,000	1930	27	——	〃 〃
Hsin Cheng (新成鐵工廠)	10,000	1929	24	——	Pipes.
Isiang Feng (祥豐直浇鐵管廠)	10,000	1920	36	——	〃
Wong Shun Tai (王順泰鐵廠)	600	1902	15	——	Screws.
Ku Shun Chi (顧順記機器廠)	2,000	1901	5	——	〃
Hsia I Hsing (冶怡興鐵廠)	2,000	1904	22	——	〃
Chiu Ching (求精機器廠)	5,000	1918	15	——	〃

San Hsin (三星五金工廠)	1,000	1930	7	——	„ and washers.
Ku Wan Hsing (顧萬興鐵工廠)	1,000	1930	13	——	„
Shun Mao (順茂機器廠)	1,000	1922	8	——	„
Tai Fu Hsing (戴福興鐵工廠)	650	1905	20	$6–$10	Steel windows, iron doors and railing.
Chia Hsieh Chang (賈協昌鋼鐵廠)	2,000	1904	10	$6–$10	„ „ „
Sheng Fu Chang (沈福昌鋼鐵工廠)	6,000	1921	27	$6–$10	„ „ „
China Metal Works (中國鋼鐵工廠)	10,000	1930	20	$16–$30	„ „ „
Sheng Li (勝利鋼窗廠)	2,000	1931	8	——	„ „ „
Tsai Jen Mao (蔡仁茂鋼窗廠)	2,000	1930	6	——	„ „ „
Chung Hsing (中興鍋廠)	4,000	1929	17	$11–$30	Boilers.
Hsü Shun Hsing (徐順興鍋爐廠)	2,000	1901	30	——	„
Yu I Chang (予義昌鍋爐廠)	10,000	1911	27	$6–$17	„
Ching Chang Hsiang (經祥)	2,000	1918	21	$18–$30	„
Ch'ien Shun Hsing (錢順興鍋爐鐵廠)	1,000	1921	12	$7–$30	„
Dah Wha Shun Chi (大華順記鋼鐵五金工廠)	10,000	1920	47	$9–$20	Taps.
Wong Ying Chang (王英祖鋼鐵號)	3,000	1924	26	——	„
Jui Chang Shun (瑞昌順機器廠)	3,000	1932	23	$10–$30	„
Fu Shun K'un Chi (福順崑記機器廠)	5,000	1926	10	$18	„
Lo Lien Chang (羅蓮昌鋼鐵機器廠)	3,000	1920	17	$10–$24	„
Hsin Ta (新大五金鋼鐵工廠)	2,000	1930	10	$6–$24	„
Cheng Yuan (正源五金鋼鐵廠)	1,000	1921	13	$6–$20	„
Teng Pao Chang (鄧寶昌鋼鐵廠)	600	1926	10	$6–$16	„

Ho Chi (和記五金工廠)	1,000	1927	7	$6–$12	„
Hsieh Cheng (協成銀箔製造廠)	10,000	1912	170	$20–$60	Safes.
Fu Kang (福康製斗廠)	1,000	1926	5	$8–$15	Irons.
Li Chung (利中鋒刀廠)	5,000	1930	4	$15–$25	Files.
Jen Hsin (壬辛五金工廠)	1,200	1931	8	$6–$20	Brass rings.
Yeh Chang Sen (葉昌森機器廠)	800	1927	4	$5	Buckles.
Lü Yung Kang (呂永康鐵廠)	5,000	1926	10	$6–$8	Kerosene lamps.
Tung I Hsiang (童義祥銅鐵廠)	1,000	1925	7	$15–$40	Incandescent lamps.
Tung Chang Hsiang (周昌祥銅鐵廠)	1,000	1928	5	$14	Lamps.
Huang Fa Chi (黃發記鐵作)	500	1923	6	$15–$20	Iron moulds.
Sung Pang Chi (宋邦記銅鐵機器廠)	4,000	1919	8	$16–$35	Patients' bedsteads and surgical instruments.
Lin Teh Hsing (林德興工廠)	4,000	1914	19	$16–$35	Hospital furniture.
Fa Chang (發昌銅鐵廠)	500	1923	5	$10	
Hua Hsing Chang (華新昌銅鐵工廠)	500	1928	9	——	Stationery.
Wong Yü Chi (王餘記鐵工場)	600	1928	11	——	
WUCHIN					
Tung Yuan Chi (同源吉)	$30,000	1898	60	$18–$20	Boilers, ploughs.
Ting Tai Yuan (鼎泰源)	9,000	1873	15	$19–$10	„ „ cans.
Jung Sheng (鎔盛冶坊)	6,000	1929	20	$5–$10	„ „ „
TANYANG					
Tai Yuan (泰源)	$ 8,000	1921	—	——	Iron pans.

WUSIH					
Wong Yuan Chi (王源吉)	$80,000	——	—	——	Iron pans.
Chang Tah Chang (章大昌)	600	1928	5	——	Hardware.
Shun Yü (順裕)	1,400	1929	13	——	"
Chang Teh Hsing (章德興)	1,000	1931	11	——	"
Sen Tai Chang (森太昌)	800	1930	9	——	"
HUAIYING					
Chen Hsing Lung (振興隆鐵廠)	$ 2,000	1932	10	$4.50	Iron pans.
NANTUNG					
Chi Sheng (資生)	$50,000	1905	70	$20–$25	Iron pans.
KIANGNING					
Chang Chien Heng (張乾亨鐵廠)	$ 2,000	1925	22	——	Iron pans.
Ho Ping (和平鐵工廠)	4,000	1929	10	——	Wrought iron wares.
TUNGSHAN					
Tung I Kung (同益公)	$ 700	1909	7	——	Iron pans.
I Chü Hsing (義聚興)	600	1914	6	——	" "
Chung Hsin Chang (崇信昌)	700	1917	5	——	" "
Fu Hsing Kung (福興公)	600	1930	4	——	" "
KIATING					
Ho Cho (合作五金製造有限公司)	$30,000	1929	48	$15–$40	Locks, keys & doorknobs.

SUPPLIES OF RAW MATERIALS

Raw materials other than pig iron and cast iron from Tayeh (大冶), in Hupeh, and cast brass from Shantung and Yunnan are imported through metal dealers in Shanghai. The following table shows the value of raw materials consumed by various lines of hardware industry in Kiangsu in 1931:—

Raw Materials	Production	Location of Factories	Number of Factories	Value of Materials
Pig iron, cast iron.	Pans, plough, and cans.	Wuchin, Tanyang, Nantung, Huaiying, Wusih, Kiangning, Tungshan	12	$177,160
Tee steel, angle iron, brass.	Steel and iron windows, door and railing.	Shanghai	6	98,000
Pig iron, iron plates.	Iron oven and stoves.	〃	5	38,000
Cast brass, cast iron, brass sheets, pipes.	Taps.	〃	9	52,790
Iron plates, asbestos, cement.	Safes.	〃	1	36,400
Pig iron, iron bars and pipes, steel plates, iron angles, screws.	Iron bedsteads and stools.	〃	7	232,000
Iron plates, iron angles, nails and screws.	Boilers, chimnies and tanks.	〃	3	33,000
Iron bars and wires.	Nails.	〃	2	180,000
Iron bars and plates.	Screws.	〃	7	4,800
Pig iron.	Pipes.	〃	2	30,000
Pig and wrought iron, brass sheets and filings.	Miscellaneous.	〃 and Kiangning	19	46,000
		TOTAL	73	$928,150

It will be noted from the above table that the manufacture of steel and iron bedsteads, stools, desks, and chairs absorbs the largest portion of the materials listed above, next come pans, cans, and ploughs, nails, steel and iron doors, windows, and railings. Although prices fluctuate according to market conditions, average quotations are approximately as follows:—

Pig iron	$ 7.00	per picul
Wrought iron	10.00	„ „
Cast iron	8.00	„ „
Iron bars	10.00	„ „
Iron angles	7.00	„ „
Iron pipe (1.8 inch)	0.18	„ foot
Steel plates	12.00	„ picul
Steel bars	12.50	„ „
Steel tees	13.50	„ „
Cast brass	42.00	„ „
Brass	66.00	„ 100 catties
Tin (Kou Kuang 鉤光)	63.00	„ „ „
Tin (Tien Tung 點銅)	130.00	„ „ „
Iron sheet (for stovepipes)	1.70	„ sheet
Iron plates	9.00	„ picul
Brass pipe	0.40-09	per foot
Asbestos	4.20	per bag (112 lbs.)
Cement	₮ 4.60	per barrel

The annual output of pans is 417,200 pieces, valued at $316,880, about 142,000, valued at $142,800, being turned out by the Chi Sheng factory in Nantung, and about $70,000 by Wong Yuan Chi in Wusih. Ting Tai Yuan and Jung Sheng in Wuchin are the two largest producers of iron cans, the two making 71,500 cans valued at $31,000 annually. They also manufacture iron ploughs, the combined annual output being 115,000, valued at $60,000. Of the $219,000 worth of iron windows, doors, and railings turned out by Kiangsu factories the China Metal Works contributes the largest share, valued at about $100,000. The share of Yu I Chang and Chung Hsing in the total output of $166,000 a year from the five stove-manufacturing factories in Shanghai is $50,000 each, that of Ching Chang Hsiang and Hsü Shun Hsing $30,000 each, and Ch'ien Shun Hsing making about $6,000 worth.

Taps made in Shanghai factories vary from 0.3 to 6 inches, those below 2 inches being made of brass and over that size of iron. The output from the nine factories in Shanghai is valued at $116,720.

Hsieh Cheng, the largest safe manufacturer in Kiangsu, makes over 1,000 safes a year, the annual output (including stoves and iron furniture) being over $100,000.

The annual output of brass and iron bedsteads, iron stools and other metal furniture from the Kung Ping Steel and Iron Works is valued at $140,000, from Tah Wha $600,000, and from Chiu Lien about $15,000, while the products from Chou Yü Chang, Hou Chang Hsiang, Chu Lung Hsing, and Li Mao Chang are valued at about $55,000 annually. Nails of the San Chi (三戟) brand from the Kung Ching factory are made annually to the value of $280,000, while the output of Chia Fu under the trade-mark of Lung Ping (龍平) is valued at $44,000. The following figures show the output, place of production and number of factories engaged in making hardware:—

	Place of Production	Factories	Output
Iron pans	Kiangying Tungshan Huaiying Wusih Wuchin Tanyang Nantung	9	$316,880
Iron cans	Wuchin	2	31,000
Iron ploughs	„	2	60,000
Iron windows, doors, railings	Shanghai	6	219,000
Iron stoves and ovens	„	5	166,000
Taps	„	9	116,720
Safes	„	1	100,000
Brass bedsteads	„	4	55,800
Iron furniture	„	7	750,000
Boilers, chimnies, tanks	„	3	60.000
Nails	„	2	324,000
Screws	„	7	14,000
Iron pipes	„	2	60,000
Irons	„	1	7,000
Files	„	1	2,000

Lamps	Shanghai	3	18,000
Keys	Kiating	1	32,000
Surgical Instruments	Shanghai	2	24,000
Others	Shanghai Wusih Kiangning	10	42,300
TOTAL			2,398,700

MARKETS

Taps, screws, nails, and pipes made in Shanghai are fully absorbed locally, but other lines are shipped to other parts of the country in considerable quantity. The following are some of the more important markets:

Iron stoves and ovens—Nanking, Chinkiang, Hangchow, Kuangtung.
Iron bedsteads, stools, safes—Canton, Chungkiang, Hankow, Amoy, Tientsin, Nanking, Chinkiang, Peiping, Hangchow, Wusih.
Iron windows, doors, railings—Nanking, Canton (small business only).
Nails—Kiangsu, Chekiang, Fukien, Anhui.
Iron pans (Wuchin make)—cans, plough—Taihsien, Taihsing, Nantung.
Iron pans (Tanyang make)—Wusih.
Irons pans (Wusih make)—Tsingkiang, Kiangyin, Kiangtu, Lishui, Chintan.
Iron pans (Huaiying make)—Kaoyu, Paoying, Huaian.
Iron pans (Nantung make)—Jukao, Tsungming, Haimen.
Iron pans (Nanking make)—Neighbourhood of Nanking.
Iron pans (Tungshan make)—Suburbs and countries of Tungshan.
Locks, keys, door-knobs etc.—Hankow, Nanking, Amoy, Chungking, Tsingtao, Ningpo.

BUSINESS METHODS

Retail sales are usually transacted on a C. O. D. basis, while wholesale business is arranged according to the position of buyers and sellers. If both parties are in Shanghai one-third of the price is paid on delivery, and the balance at the end of the month. When the buyer is not in Shanghai the privilege of paying one-third on delivery and the balance in 30 or 60 days is not allowed unless a reliable guarantor is forthcoming. Wholesale buyers usually get 10 or 20 per cent discount of list prices.

CHAPTER XXXII

ALUMINIUM UTENSILS

SHANGHAI is the centre of the aluminium ware industry. In 1913 the Hua Chang Can-Printing Factory (華昌印刷製罐廠) started to make spoons, dishes, bowls, etc. and in 1918 the I Tai Hsin Chi Factory (益泰信記) was founded, and in 1927 saw the establishment of I Chang (怡昌), in 1925 the Pao Hsing (寶興), was started, followed in 1929 by the Yih Chang (益昌), and in 1931 by the Chin Hua (金華).

There are altogether six aluminium factories in Shanghai, Hua Chang being the oldest, as well as the largest, factory in Kiangsu. With the exception of I Chang, which is an unlimited liability concern, all these concerns are under private ownership, and are run with a very small staff. Workers receive from $6 to $24 a month, the average being from $10 to $15. A day shift lasts from 10 to 12 hours, and a night shift 3½ hours, paid for as a half-day. The following table shows details of the standing and equipment of aluminium factories in Shanghai:—

	Established	Capital	Workers	Motive Motors	Power Horse-power
Hua Chang ..... (華昌鋼精廠)	1913	$50,000	110	11	251
I Chang ..... (怡昌鋼精廠)	1927	10,000	21	1	5
Chin Hua ..... (金華鋁精器皿廠)	1931	——	—	—	—
I Tai ..... (益泰信記廠)	1926	10,000	81	2	34
Pao Hsing ..... (寶興鋁精製造廠)	1925	10,000	28	1	7.5
Yih Chang ..... (益昌金屬鋁精器皿廠)	1929	10,000	28	2	12.5

SOURCE OF MATERIALS

Aluminium slab is only used by the Hua Chang factory, which makes its own sheets. About 180 tons are

bought from Germany, France, and the United States annually at Tls. 1,400 per ton, the total value being Tls. 252,000.

Aluminium sheet is made solely by Hua Chang, and about 720 piculs are turned out annually, the price being about $126 per picul. Other factories use American sheets, which are sold at about $140 per picul, each factory consuming from 15 to 25 piculs a month. It is estimated that about 2,000 piculs of aluminium sheets (valued at $200,000) are used annually by this industry.

OUTPUT

The product of the six Shanghai factories mainly consist of kitchen utensils. Hua Chang has the largest output, amounting to about $500,000 a year, I Tai over Tls. 130,000, the others ranging from $30,000 to $80,000. The output of Pao Hsing is about 600,000 pieces annually.

MARKETS

Shanghai, Nanking, and Hankow are the principal markets where Chinese aluminium ware is sold, while Szechuen, Fukien, and Kiangsi also take a large share, and markets abroad are found in the Straits Settlements and Philippine Islands.

Generally, one-third of the purchase-price is paid on ordering goods, and the balance on delivery or at the end of the month, but by arrangement payment may be made at any time agreeable. Owing to the increased demand, the industry is steadily growing and the following table gives the products, trademarks, markets and output of the factories in Kiangsu:—

	Products	MARKETS		Sales (1931)
		China	Abroad	
I Tai (益泰)	Household utensils	Yangtse ports		$134,000
Chin Hua (金華)‡	Household utensils			
I Chang (怡昌)	Various utensils	Shanghai, Nanking, Hankow, Swatow.	Straits Settlements, Philippines	85,000
Hua Chang (華昌)	Various utensils	Shanghai, Nanking, Hankow, Szechuen, Fukien,	Straits Settlements, Philippines	96,000
Yih Chang (益昌)	Kitchen utensils	Kiangsi		64,000
Pao Hsing (寶興)	Household utensils			42,000

‡In the course of promotion

CHAPTER XXXIII

BRASS, COPPER, AND TIN UTENSILS

THE MAKING of brass, copper, and tin utensils in Shanghai began to develop in the latter part of the nineteenth century, and by 1904 there were 50 factories engaged in this industry, with an output of $1,400,000 annually. A trade association was then formed in Shanghai, but with the establishment of the Republic there came a change in the mode of life and customs of the people. Brass, copper, and tin wares formerly used for dowries and in offering sacrifices to ancestors and deities were no longer in keen demand, and thus began the decline of this industry in Shanghai.

These metal-workers are mostly operated as partnership concerns, very few being owned by one individual, while there is not a single company in the business. Generally the workshop is attached to the sales office, while those concerns having no factories of their own place orders on other shops and supply the materials required. The equipment of the workshops is very simple, consisting usually only of a few hand tools. The following are particulars of the largest brass, copper, and tin ware manufacturers in Shanghai:—

	Established	Capital	Products
Feng Yung Chang (馮永昌銅錫店)	1864	$ 20,000	Brass, copper, and tin ware.
Teh Chang (德昌銅錫店)	1879	25,000	" " " " "
Tien Yuan (天元銅錫店)	1865	50,000	" " " " "
Wan Feng (萬豐銅錫店)	1884	20,000	" " " " "
Wan Chu (萬聚銅錫店)	1891	23,000	" " " "
Lou Teh Tai (老德泰銅錫店)	1889	25,000	" " " " "
Wong Ta Yu (王大有銅錫店)	1886	22,000	" " " " "
Tung Chang (東昌銅錫店)	1892	10,000	" " " " "
Wan Yu (萬餘銅錫店)	1876	10,000	" " " " "
Chang Yuan Li (張元利銅錫店)	1894	16,000	" " " " "
Mao Shang (茂盛銅錫店)	1928	8,000	" " " " "
Yung Chang Cheng (永昌成銅錫店)	1904	4,000	" " " " "
Hsi I Feng (西義豐銅錫店)	1902	3,000	" " " " "
Chien Tai Feng (錢泰豐銅錫店)	1892	8,000	Brass and copper ware.
Hsin Ta Jen Chi (信大仁記銅錫店)	1884	4,000	Gongs, cymbals, basins, footwarmers, etc.
Yu Feng Jen (裕豐仁銅錫店)	1912	₸ 1,500	Brass, copper, and tin ware.
Hsu Shun Ta (許順大銅錫店)	1898	$ 3,000	" " " " "
I Hsing Jen (義興仁銅錫店)	1900	4,000	" " " " "
Hsieh Ching Lung (謝慶隆銅錫店)	1921	1,000	" " " " "
Lo Ta Chang (樂大昌銅錫店)	——	3,000	" " " " "
Lo Chin Chang (樂金昌銅錫店)	1920	3,000	" " " " "
Chang Wan Sheng (張萬盛銅錫店)	1892	3,000	" " " " "
Lou Shuang Cheng (老雙成銅錫店)	1882	5,000	" " " " "
Wong Lung Hsing (王隆興銅錫店)	1891	4,000	" " " " "
Ju I Hsiang (如意祥餐銀銅器店)	1901	25,000	Brass, copper and German silver ware.

There are 21 copper and brass ware shops and 10 tin shops in Wuchin, the second largest centre of the industry in Kiangsu, the capital of 10 shops ranging from $500 to $100, while the rest have practically no capital at all, receiving raw materials with the orders supplied from others in the trade. In Nantung there is one copper and brass smith, established in 1916 with a capital of $120.

RAW MATERIALS

Copper, brass, tin, and lead are the principal materials used, and the following table shows the price per picul of 100 catties of some common varieties of metal under normal conditions in 1932:—

Sheng Pan (生板 Brass or German silver plate)	$ 21
Shu Pan (熟板 Brass or German silver plate)	26
Yeh Pan (葉板 Brass plate)	30
Chia Kao Pan (加高板 German silver plate)	55
Shuang Chang (雙張 Brass plate)	46
Shui Kuang (水光 Brass plate)	53
Huang Pi (黃皮 Brass sheet)	61
Hung Pi (紅皮 Copper sheet)	71
Tien Hsi (點錫 Tin-copper alloy)	130
Kou Kuang (鉤光 Tin-copper-black lead alloy)	63
Tao Kou (倒鉤 Tin-copper-black lead alloy)	16
Ching Chien (青鉛 Black lead)	14
Pai Chien (白鉛 White lead)	22

Ching ch'ien or black lead is mixed with tin, and *pai ch'ien*, or white lead, with brass, to form alloys. *Hung pi*, black, and white lead are imported from the United States, *tien hsi* from Singapore, and *kou kuang* and *tao kou* from Holland. Twenty years ago Yunnan supplied Shanghai tinsmiths with *tien hsi*, *kou kuang* and *tao kou*, but recently very little of these alloys has been shipped to Shanghai from that province. To make up this deficiency an alloy of *tien si* with black lead is made in China as a substitute. *Huang pi* or brass sheet comes from Germany, the United States, and Great Britain, with a small portion from Japan. Half of the *shuang chang*, or brass plate, used by Kiangsu brasssmiths is imported from Japan, the remainder being domestic product. *Sheng pan* and *shu pan* were formerly bought from Japan, but factories in Shanghai now turn out these lines by melting down old brass and other metals.

According to an estimate by a trade authority, the output in Shanghai and Wuchin is about $1,160,000. When 45 per cent of this is deducted for wages, the cost of raw materials is $638,000, the percentage spent on different varieties being as follows:—

Tien hsi, kou kuang, tao kou	18.0
Ching chien	13.0
Sheng pan	13.0
Shu pan	13.0
Yeh pan	13.0
Chia kao pan	8.5
Hung pi	8.5
Shuang chang	6.0
Huang pi	6.0
Shui kuang	1.0
	100.0

PRODUCTION

Among the principal lines brass ware made are *hua t'i* (花 提, engraved foot-warmers) *hsin t'i* (新 提, foot-warmers), *his pei* (西 盆, basins), *ta shoh* (打 杓, ladles), *tsai huo* (菜貨, dinner sets), *tzu kuang hu* (紫光壺, copper kettles), *tzu kuang cho* (紫光掇, a deep, broad-mouthed copper vessels with handles), *huang hu* (黃 壺, brass kettles), *ch'ao lo* (抄 鑼, small gongs), *shuang kuang lo* (雙 光 鑼, big gongs), and *shuang kuang po* (雙 光 鈸, cymbals). Candlesticks, incense-burners, kettles, tea-bottles, trays, and foot-warmers are among the more important lines of tin ware. Metal goods are sold by weight, and the following is the price per 100 catties of some of the principal lines of brass, copper, and tinware fixed by members of the trade association in September, 1932:—

Hsin ti (新 提 foot-warmers)	$ 33.00
Hua ti (花提 engraved foot-warmers)	40.00
Hsi pen (西 盆 basins)	34.00
Ta shoh (打杓 ladles)	35.40
Tzu kuang hu (紫光壺 copper kettles)	88.00
Tzu kuang shoh (紫光杓 copper ladles)	89.00
Huang hu (黃壺 brass kettles)	60.00

Chao lo (抄鑼 small gongs)	90.00
Shuang kuang lo (雙光鑼 big gongs)	96.00
Shuang kuang po (雙光鈸 cymbals)	108.00
Tien fang chien (點方件 square ware of Tien Hsi)	72.00
Tien yuan chein (點圓件 round ware of Tien Hsi)	70.00
Kou fang chien (鉤方件 square ware of Kou Hsi)	33.00
Kou yuan chien (鉤圓件 round ware of Kou Hsi)	31.00

The business handled by brass, copper, and tinsmiths in Shanghai ranges from $10,000 to $150,000 annually, while the products of Wuchin are valued at $56,000 and from Nantung $6,000, making the total for Kiangsu about $1,162,000 per annum.

TRANSACTIONS

Most of the brass, copper, and tin ware made in Kiangsu is disposed of in Shanghai, with Tsungming (including Chitung, Haimen), Southern Kiangsu (including Nantung, Jukao, Taihsing, Taihsien, Lincheng, Yencheng, Tungtai, Hsinghua, etc.) and neighbouring districts to Shanghai as the next best customers. In Hankow, Nanking, Hangchow, Kashing, Foochow, Canton, and other South China cities Kiangsu products are also found, but the business is not big, owing to the competition of local makers.

Before the formation of the trade association prices of metal ware were fixed by makers individually, but wholesale prices are now fixed by mutual agreement and are observed by every member of the association, retail prices being fixed by individual shopkeepers.

Large quantities of imported brass and tinware are sold in Shanghai, but there is no direct contact between dealers and factories abroad, orders usually being placed through foreign importers in Shanghai. Prices are quoted in foreign currency, and quantities are in terms of tons. On arrival of a consignment notification is given by the importers and the date for payment fixed, from 14 to 20 days' storage in godwons being allowed free of charge. Payment is usually made with a 10-day native bank order, on receiving of which the importers issue warrant for clearance from godown.

CHAPTER XXXIV

CAN-MAKING

CAN-MAKING as an established industry in Kiangsu is only about 14 years old, being started by the Hua Cheng factory (華成製罐廠) in 1919. Owing to the rapidly increasing demand more factories soon came into existence until now there are 27 engaged in the business, with the Industrial and Trading Co. Ltd. (康元廠) the most prosperous and best-equipped, doing about half the total business. The Han Chang Bottle Factory (滬鋁) and the Victor Co., Ltd. (裕泰), in addition to making flasks, also do a large business in can-making.

Some of the large factories, in addition to making cans, undertake printing on tinplate, among them being the Industrial and Trading Co. Ltd., Scientific Tin-plate Printing Co. (科學) I Chang (義錩), Hua Cheng (華成), Chia Mei (嘉美), Han Chang, Hsieh Chang (協昌), and Victor. Among the Can-making concerns there is only one company of limited liability, about two-thirds of these factories being organized as partnerships and the remainder as individual enterprises.

The Industrial and Trading Co. maintain the largest staff, with 50 clerical workers, and 400 factory operatives, while the rest have from a dozen to 200 operatives. Working hours in modern factories like the Industrial and Trading Co., Chia Mei, etc. are 9 for the day shift and two hours for a night shift, but in some factories the day shift works 11 hours. The wages paid by the Industrial and Trading Co. are the highest in the industry, men receiving from $20 to $80 a month, and women from $9 to $18, child workers receive from $9 to $10, and apprentices from $7 to $15, while wages in other factories range from $7 to $50 per month.

The following table shows details of the general conditions prevailing in can factories in Shanghai:—

	Established.	Capital	Workers	Motive Power	Products	Capacity	Value	Markets
Industrial & Trading Co. Ltd.,	1922	$120,000	400	4 motors (44 h.p.)	Printed cans & other manufactures		$ 900,000	Singapore, Hongkong, Fukien, Yangtse valley, North China
Scientific Tin-Plate Printing Co.	1927	14,000	61	5 ,,	Flask cases, tea-can, cosmetic cases		100,000	Shanghai & other ports
I Chang Sheng Chi	1928	20,000	90	5 ,, (15 h.p.)	Printed cans		120,000	Siam, Chefoo, Changsha, Shanghai
Hua Cheng	1919	20,000	200	4 ,, (26 ,,)	Cans & cases	4,800,000 pcs.	250,000	Shanghai
Chia Mei	1929	20,000	70	2 ,, (8 ,,)	,,	,,	90,000	,, & other ports
Tai Hsing (泰興製罐廠)	1928	10,000	25	2 ,, (8 ,,)	Cups & bowls	10,000,000 pcs.	25,000	Shanghai
Li Cheng Hsing (立成興製罐廠)	1922	8,000	50	2 ,, (10 ,,)	Cans		10,000	,,
Jun Yu (潤裕製罐廠)	1919	6,000	34	1 ,, (5 ,,)	,,		16,000	,,
Han Chang	1921	5,000	123	4 ,, (64 ,,)	Flasks, cigarette cans	1,080,000 pcs.	₹ 250,000	,,
Tung I Ho (同怡和公記製罐廠)	1923	5,000	15	12 ,, (50 ,,)	Cigarette cans			
Hsin Chang (鑫記製馬口鐵罐廠)	1925	5,000	23	3 ,, (15 ,,)	,, ,, & others		$ 65,000	Shanghai
Chen Teh Hsing (陳德興機器製罐廠)	1923	4,000	25	1 motor (3 h.p.)	Cans		12,000	,, & other ports
Ho Hsin Chang (合興昌機器製罐廠)	1930	4,000	12	1 ,, (5 ,,)	Cans & machine repairing	100,000 pcs.	70,000	
I Chang (毅昌機器廠)	1931	4,000	20	1 ,, (5 ,,)	Cans & cosmetic cases		30,000	Shanghai & other ports

Chen Chü Hsing (陳聚興機器製罐廠)	1923	3,000	10	1	motor	(3 h.p.)	Cans & cases	1,095,000 pcs.	50,000	Shanghai & other ports
Chung Yang (中央機器製罐廠)	1928	3,000	14	1	„	(5 „)	Cans & furniture		20,000	„ „
Sheng Teh Chang (沈德昌機器製罐廠)	1929	3,000	10	1	„	(3 „)	Cans		15,000	„ „
Chun Kang (均康製罐廠)	1929	2,000	13	1	„	(3 „)	Cans		10,000	„ „
Tung Chang (同昌機製水瓶罐頭工廠)	1931	2,000	22	1	„	(6 „)	Flasks & cans		20,000	Straits Settlements, Philippines, Kiangsu, Chekiang
Chü Chang (鉅昌製罐廠)	1928	2,000	7	1	„	(5 „)	Cans	180,000 pcs.	10,000	
Fu Heiug (福興製罐廠)	1925	2,000	20	1	„	(31 „)	„ & cases		55,000	Shanghai
Hsieh Lung (協隆機器製罐廠)	1930	1,600	10	1	„	(5 „)	„	100,000 pcs.	70,000	„
Chin Lung Mao (金隆五罐頭廠)	1926	—	14	1	„	(5 „)	Cases	300,000 pcs.	15,000	—
Yuan Fa (元發機器製罐廠)	1923	1,000	22	1	„	(3 „)	Can covers		11,000	Shanghai
Heieh Chang (協昌印刷製罐廠)	1928	20,000	42	3	„	(9 „)	Printed cans & cases		50,000	„ & Amoy
Victor (福泰合記彩印製罐廠)	1931	30,000	62	2	„	(14 „)	„ „ & flasks	flasks 3,000 doz. cans 100,000 doz.	$ 114,000 $ 5,000	Shanghai, Hankow, Canton, Straits Settlements, Philippine Islands

IMPORTED RAW MATERIALS

Large factories like the Industrial and Trading Co., Hsieh Chang, and Victor each use more than 1,200 boxes of tin-plate a year, the smaller concerns taking about 100 boxes. Tin-plate is imported from Great Britain and the United States, Shanghai using over 10,000 boxes a year, valued at about $150,000.

Printing ink comes from Japan, Great Britain, the United States, and also from Chinese factories in Shanghai. The small factories uses about 250 pounds of ink a year, but Hsieh Chang and Victory each take over 1,000 pounds, and the Industrial and Trading Co. more than 1,500 pounds a year. Prices vary from 80 cents to $15 a pound, but the quality priced at $4.20 is used to the largest extent by Shanghai factories.

The gasolene market in China is almost monopolized by the Standard Oil Co. of New York and the Asiatic Petroleum Co. A large can making factory uses over 150 tins a year.

Yuah'Fa and I Chang use aluminium in addition to tin-plates for making cans. Supplies come from Great Britain and the United States, selling at about $105 per picul. The total needed annually by the two factories is only about 20 piculs, valued at over $2,000.

Only Chinese glue is used in local can-making factories, but it is not an indispensable material, and is only used by Hsieh Chang and Victor to the extent of about 200 tins a year, valued at $20 per tin.

I Chang uses about 120 gallons of varnish a month, and product of the Chen Hua Paint Manufacturing Co., Ltd. (振華) sells at $4 per gallon.

MARKETING

The largest market of the local can-making industry is found in Shanghai, their business being with the following industries, given in order of their importance:—Tea, gourmet-powder, cigarettes, confectionery, cosmetics, paints, medicines, vacuum-flasks, signboards and stationery supplies. In addition to Shanghai, Canton, Hongkong, Straits Settlements, the Philippines, Chefoo, and the Yangtse

Valley are also important markets for the Shanghai can-making industry.

The amount of business handled by various factories last year has been already shown in a table, but there are no statistics available showing the business done during the last three years by all the factories. Judging from the following figures, showing the business of two representative factories during the last three years, however, it is evident that the industry is progressing steadily:—

	1929	1930	1931
Industrial & Trading Co.	$470,000	$620,000	$950,000
Hsieh Chang	30,000	33,000	35,000

The total volume of business of the Industrial and Trading Co. in 1929 was ten times the turnover in 1926.

Although there are about 27 can-making factories in Shanghai, only nine (the Industrial and Trading Co., Hua Chen, Scientific Tin-plate Printing Co., Chia Mei, Han Chang, I Chang, Hsieh Chang, Jun Yü, and Victor), are members of the Trade Association.

CHAPTER XXXV

PAINT AND VARNISH

ON ACCOUNT of their dull tone Chinese paints have been largely displaced by imported colorings, or by the products of Chinese factories whose output is of similar character to foreign paint. The year 1915 saw the establishment in Shanghai of the Kailum Paint and Varnish Manufacturing Co. Ltd. (開林油漆公司), the Province of Kiangsu thus being the pioneer in manufacturing paint on modern lines. The Chen Hua Paint Manufacturing Co. Ltd. (振華油漆公司) was organized in 1918 with a substantial capital and efficient management, followed by the Yung Ku (永固造漆公司) in 1926, the Durvar Varnish Works (永華製漆公司) in 1929, and latterly the Wan Li (萬里油漆廠).

There are five paint factories in Kiangsu, all located in Shanghai, and all limited liability concerns, as follows:—

	Location	Capital	Operatives	Electric (h. p.)
Kailum	Kiangwan Road (江灣路)	$250,000	258	800
Chen Hua	Tan Tzu Wan (潭子湾)	200,000	86	160
Yung Ku	Kiangwan Road (江灣路)	120,000	36	50
Durvar	Che Tai Chiao (車袋角)	40,000	20	12
Wan Li	Hsieh Tu Road (斜土路)	20,000	15	20

Wages range from $12 to $50 for men, and for women from $8 to $12, while children are paid from $8 to $11 a month.

RAW MATERIALS

Stone powder is a product of Kaotze and Changhing (長興), and is obtainable at Shanghai and Wuhsien at $1 per picul.

Tung oil comes from Siushui (秀水), Fowlin (涪陵) Pengshui (彭水), Kiukiang, Liangshan (梁山), Tienkiang (墊江), and Wanhsien (萬縣) in Szechuen; Changteh (常德), Paoking (寶慶), Shenchow (辰州), Hungkiang (洪江), Lichow (澧州), Tsingchow (靖州) and Yungchow (永州) in Hunan; Yünyang (鄖陽), Ichang (宜昌) and Laohokow (老河口) in Hupeh; Tungjen (銅仁) and Sungtao (松桃) in Kuichow; Kweikiang (桂江) in Kuangsi; and Tunglu (桐廬), Fenshui (分水), Kienteh (建德), Suichang (遂昌), Shunan (淳安) in Chekiang, all these being important producing places. Paint made with tung oil dries quickly and is very durable. The price of tung oil is $25 per picul.

Perilla oil is produced at Kalgan and in the Three Eastern Provinces. It has very good drying properties, is waterproof, and sells at $32 per picul.

Before tung oil was exported to Europe and America, linseed oil was the most widely-used drying oil. Inner Mongolia, Chahar, Honan, Hopei, Shantung, and Shansi are well-known producing centres, but the quality is not so good as the linseed oil imported from Great Britain and India, which is sold at $36 per picul.

Although a semi-drying oil, bean oil is used with driers of fine quality in making paint on account of its quick drying properties. Producing districts extend over nine provinces, namely the Three Eastern Provinces, Shantung, Kiangsu, Anhui, Honan, Hunan and Hupeh. It is sold at about $18 per picul.

Oils of *Sapium sebiferum*, Roab (烏臼子油) and *Canuabis sativa* (大麻子油), cotton, rape, and sesame seeds in China are very rich, but owing to poor methods of pressing contain too many impurities, and sometimes the price is too high for use in manufacturing paint.

Ultramarine blue, chrome yellow, vermilion, zinc oxide, lithophone, and barium sulphate are the pigments most commonly used in paint-manufacture. With the exception of iron oxide, which is a product of Shantung and some red, yellow, blue, green, and black pigments made by the Kailum and Chen Hua companies, colors for manufacturing paints are mostly imported from Great Britain, the United States, and Germany.

There are two kinds of driers, soluble and insoluble. To the first group belong manganese resinate, lead linoleate, etc., and to the second lead oxide (yellow and red), manganese oxide and acetate, lead acetate, and salts of cobalt. Some salts of manganese, cobalt, and lead are found in Kuangtung, and Hunan, but most are imported.

Spirits of wine, wood alcohol, naphtha, benzine, turpentine, camphor oil, carbon tetrachloride, etc. are used in large quantities in paint manufacture. Since home supplies are not available in China, it is necessary to import them.

Colophony or rosin, turpentine, copal, amber, dammar, shellac and gum arabic are largely used in making paint. Owing to the limited quantity and inferior quality of the colophony from Wenchow, Chekiang, these supplies are almost wholly imported.

RANGE OF PRODUCTION

Paint, enamel and varnish are the principal products of Chinese paint-manufacturing enterprises, the processes of manufacturing being almost the same, the essential difference being in the raw materials employed. The products of the various concerns are also similar, but the larger and older factories, like the Kailum, Chen Hua, and Yung Ku, turn out more varieties and a better quality of product. The following is a list of the products and brands of five factories in Kiangsu:—

	Trade Mark	Products
Kailum	Double Axe	Paste paint, enamel, varnish, ready-mixed paint, furniture varnish, paint oils, rubbing enamel, fillers, pigments, linseed oil, body varnish, lithographic varnish.
Chen Hua	Flying Tiger, Double Flag, Three Sheep Wu Ti (無敵) Penoy.	Paste paint, enamel, varnish, ready-mixed psint, furniture varnish, paints oils, rubbing enamel, fillers, pigments, lead oxide, anti-corros-impaints.
Yung Ku	Great Wall, Windmill.	Paste paint, enamel, varnish, ready-mixed paint, anticorrosive paints, Ningpo varnish.
Durvar	Wakening Lion, Peacock.	Paste paint, enamel, varnish, ready-mixed paint, furniture varnish.
Wan Li	Ship	paste paint, enamel, varnish, patent driers, body varnish, floor wax.

The development of paint-manufacturing in recent years has been so rapid that the output is increasing tremendously every year. In 1929 the aggregate output in Kiangsu was valued at $850,000, in 1930 at $1,250,000, and in 1931 at about $2,000,000. The following figures show the output of the five factories in Kiangsu:—

	1929	1930	1931
Kailum	$250,000	$250,000	$ 300,000
Chen Hua	400,000	600,000	1,000,000
Yung Ku	200,000	350,000	460,000
Durvar	——	50,000	150,000
Wan Li	(In course of promotion.)		

In addition to supplying the home markets, these factories export their products to the Straits Settlements, Manila, Java, Samarang, and the British and Dutch Indies. According to one estimate, Shanghai consumes 50 per cent of the total output, Northern and central China 30 per cent, with Kuangtung and Kuangsi and foreign markets taking the balance of 20 per cent.

Paint imported from Europe and America is more expensive, and is used on the best buildings only. The following figures show the value of paint, etc. imported during the last three years:—

	1929	1930	1931
Lead, red, white, and yellow, white zinc.	₮ 671,055	₮ 798,849	₮1,242,475
Enamel	222,336	175,414	145,992
Varnish	319,913	388,182	476,855
Not otherwise recorded	1,545,064	1,617,313	1,742,397

Raw materials for manufacturing paint are bought in Shanghai. Brokers representing foreign firms usually go to factories with samples to solicit orders, payment being made on delivery. Oil and stone powder are bought from local factories, payment being made not later than one month after delivery.

Agents of paint-manufacturing companies are established at various ports, who buy paint at wholesale prices and sell on a commission basis. Payment is usually made with a ten-day order on a native bank. Sales in Shanghai are usually handled by hardware shops on a 5 to 10 per cent commission, the transportation charges being borne by the factory, with accounts settled twice a month.

CHAPTER XXXVI

ELECTRICAL SUPPLIES

ALTHOUGH electricity has been used in many parts of China as a source of light and power for about half a century, the manufacture in this country of electrical supplies began only about 10 years ago.

Batteries were first made by the Kuo Hua works, (國華電池廠), Shanghai, in 1912. After a successful trial of this company's cells made by the Ministry of Communications, the establishment of the Chiao Tung Pu Battery factory (交通部電池廠) at Pootung by Kuo Hua was authorized. On the closing-down of the Kuo Hua factory in 1920 the Chung Kuo works was opened on a much bigger scale, the Tanpon Storage Battery Company (譚仲電池廠) came next into existence, and there are now over 20 factories engaged in manufacturing cells and batteries, which are of excellent quality, and compare very favorably with imported goods.

LAMPS AND SHADES

The manufacture of electrical fittings was not begun until the Chinese National Engineering Mfg. Co., Ltd. (益中公司) started operations in 1922. Later the Fan Fu Shun (范復順) started making wooden fittings and fixtures. The Chun Hua No. I Factory (中華第一廠) was the pioneer in making light bulbs and following in its wake came the Pao Hua (寶華), Pu Chao (普照), Fu Lai Hsin (福來新), Kuang Ya (光亞), Ming Hua (明華), An Ning (安寧), Chin Hsing (金星) and Chen Feng (振豐). Owing to lack of capital and experience, however, Chinese makers of electric lamps did not make much headway, and many of them closed down, but the situation has changed lately, and many new factories have opened and are

doing considerable business. In Kiangsu are three large bulb factories, the Lai Ke Sheng (來克勝), the Opel (亞浦耳), and Hua Tung (華通電燈泡廠). Chinese-made glass shades and bowls are made by the Shanghai Glass Factory (上海玻璃廠), while enamel shades are made by the Chu Feng (鎔豐) and I Feng (益豐) factories.

GENERATORS

In 1917 the Ta Hsiao factory (大效電機廠) started making direct-current generators, but suspended business after a short time. The Wahson factory (華生電器廠) subsequently started to manufacture direct-current generators, but as their use is very limited, the Chinese National Engineering & Mfg. Co., Ltd. in 1923, began making A. C. generators. At the same time this company took the initiative in making transformer, and now manufactures a wide range of transformers from those used in connecting electric bells to others with a capacity of 6,600 volts and 400 k.v.a.

DOMESTIC APPLIANCES

Electrical appliances for domestic use, such as irons, stoves, fans, radiators, etc. were first made in 1925, and the Chinese National Engineering Co. supplies the largest share of these goods, with flat-irons from Fan Fu Shun and radiators and stoves from the Chang Kiang Factory (長江廠), electric fans being a speciality of the Wahson factory.

WIRELESS SETS

With the opening of many short-wave radio stations in China the number of factories manufacturing receiving-sets has rapidly increased. The National Reconstruction Commission Radio Factory (建設委員會無線電廠), Chung Hua San Chi Jui Tien Co. (中華三極銳電公司), China Scientific Instrument Co. (大華科學儀器館), and Hung Kang Radio Factory (鴻康無線電廠) are the chief concerns manufacturing radio sets, but the parts used are still imported.

DETAILS OF FACTORIES

There are 48 large factories in this Province engaged in making electrical machinery, fittings, fixtures, etc., with another 33 manufacturing flashlights, batteries, cells and parts thereof. Two firms undertake electric welding operations, another makes shades and cleats, etc., 7 are manufacturing generators, fans, radiators, domestic and other electrical appliances, with one concentrating on wireless and Neon lights. General conditions in the industry are shown in the following table:—

	Established	Capital	Worwers	Principal Output
Hua Tung (華通電業機器廠)	1926	₸ 65,000	200	Radiators, switches, stoves, oil-filtering machines, bleaching-powder machines.
Chien Chang (建昌機器廠)	——	$ 10,000	16	Switches, switchboards, transformers, tramcar parts.
Chinese National Engineering & Mfg. Co., Ltd. (益中機器有限公司)	1923	$300,000	197	Mosaic tiles, cleats.
I Feng (益豐電器製造廠)	1931	₸ 44,000	50	Sockets.
Shun Chang (順昌電料車木廠)	1926	——	30	Plugs.
Yung Chang Hsing (永昌興電焊公司)	1930	$ 700	8	Electric welding.
Jung Hua (榮華電焊公司)	1929	$ 100	2	Electric welding.
Opel Factory (亞浦耳電器廠)	1928	$100,000	110	Electric bulbs.
Opel Factory Company, Ltd. (亞浦耳電器有限公司)	1930	$100,000	78	Electric fans.

Fu Lai T'o (福來脫燈泡廠)	1929	$ 12,000	41	Electric bulbs.
Olton Electric Manufacturing Factory (亞爾登電器製造廠)	1925	$ 12,000	90	Electric bulbs, switches, and sockets.
Wahson (華生電製造廠)	1916	$100,000	180	Generators and fans.
Solor Electric & Manufacturing Co., Ltd. (光明製造熱水瓶廠)	1925	$180,000	147	Shades and bowls.
Eastern Neon Light Co.(東方年紅電光公司)	1930	$ 60,000	32	Neon Lights.
Chung Hua San Chi Jui Tien Co. (中華三極銳電公司)	1927	$ 40,000	11	Radio, fixtures & fittings, generators.
Chang Ming (昌明電器股份有限公司)	1930	$ 50,000	120	Flashlights.
Ying Feng (盈豐電器廠)	1931	$ 50,000	35	Flashlights.
Jeh Yu Tung Chi (德餘同記電器廠)	1930	$ 20,000	64	Flashlights.
Yung Feng (永豐電器製造廠)	1929	$ 13,300	45	Flashlights.
Chin Ta (錦大電筒廠)	1929	$ 7,000	30	Flashlights.
Ta Cheng (大成手電筒製造廠)	1930	$ 5,000	40	Flashlights.
Jih Kuang (日光電筒廠)	1930	$ 6,000	8	Flashlights.
Kung Ming (公明電球泡廠)	1928	$ 6,000	42	Flashlight bulbs.
I Cheng (義製電筒廠)	1931	$ 5,000	15	Flashlight bulbs.
Yao Hua Fu Chi (耀華富記電器製造廠) ...	1930	$ 5,000	22	Flashlight bulbs.
Kuan Chu (寰球電工廠)	1928	$ 5,000	22	Flashlight bulbs.
Chien Hsing (建興廠)	1930	$ 2,000	5	Flashlight cases.
Yu Chang (餘昌電筒廠)	1931	$ 1,500	17	Flishlight cases.

Hua Cheng (華成電器廠)	1930	$ 1,000	22	Flashlight cases.
Chen Hua (振華燈廠)	1927	$ 5,000	55	Flashlight cases & desk lamps.
Tanpon Storage Battery Co. (譚泮蓄電池公司)	1923	$ 10,000	10	Accumulators.
Hui Ming (滙明電池製造廠)	1926	$ 5,000	18	Batteries.
Hua Ming (華明電池廠)	1931	$ 3,600	30	Batteries.
Anglo-Chinese (中英電池有限公司)	1931	$ 2,400	17	Batteries.
Chung Yang (中央電池廠)	1927	$ 2,000	25	Batteries.
Kuang Hua (光華電池廠)	1923	$ 2,000	25	Batteries.
Ta Kuang Ming Pai Chi (大光明伯記蓄電池公司)	1927	$ 1,500	21	Accumulators.
Chen Hua (振華電池廠)	1926	$ 1,000	44	Batteries.
Ya Ke Lin (亞克令電池廠)	1931	$ 1,000	4	Batteries.
Li Hua (勵華蓄電池公司)	——	$ 1,000	10	Accumulators.
Ta Ming (大明電池廠)	1931	$ 1,000	9	Batteries.
Yuan Hsing (元興電池廠)	1929	$ 400	6	Batteries.
Chen Hsin (振新電池廠)	1929	$ 350	12	Batteries.
Chung Kuo (中國蓄電池廠)	1922	$ 10,000	14	Batteries.
Wu Hsing (五星電池製造廠)	1923	$ 5,000	80	Batteries.
Chin Hsin (錦新電池製造廠)	1925	$ 3,000	8	Batteries.
Asia (亞州電池製造廠)	1928	$ 10,000	120	Batteries.
Lai Ke Sheng (來克勝電池廠)	1927	$ 12,000	40	Batteries.

Excluding the Shun Chang whose capital is not known, the capital of the concern listed above is about $2,186,850, grouped as follows:—

Capital.	Concerns.
$100 to $1,000	8
$1,001 to $5,000	17
$5,001 to $10,000	8
$10,001 to $50,000	7
$50,001 to $100,000	5
$100,001 to $300,000	2

The above factories employ about 2,200 workers, an average of 46 for each factory. Hua Tung, Wahson, Kuang Ming, and the Chinese National Engineering Co., employ the largest number of operatives, each having about 200 men. The following shows the number of workers engaged in Shanghai electrical supplies factories grouped according to size:—

Workers	Factories
1— 10	10
11— 20	8
21— 30	9
31— 40	4
41— 50	5
51— 60	1
61— 70	1
71— 80	2
81— 90	1
91—100	—
101—150	3
151—200	4

Workers in these factories are almost exclusively men and the highest wage paid is $40 per month, with the lowest $6. Working hours vary from 8 to 10 a day.

SUPPLIES OF MATERIALS

Most of the raw and partially manufactured materials used in making electrical appliance and supplies are imported.

Brass, glass, and bulbs are the three most important lines needed for making flash-lights. Brass comes from Japan, Yunnan, or the Kung Ho Brass Factory (公和銅廠), the price being about $75, $105, and $70 respectively. About 620 piculs of brass are used in this industry every month. Glass lenses are imported from Great Britain and Japan at three cents each, but Chinese glass is also used to a large extent, and about 200,000 lenses are needed monthly. In addition to the 150,000 lamps produced monthly by the Kung Ming factory, electric bulbs for flashlights are imported from the United States and Japan at $11 and $5 per 100 respectively, while Chinese-made bulbs are sold at $2.50.

Supplies for manufacturing batteries are partly obtained in China and partly imported from the United States, Great Britain, France, Japan, Germany, and Belgium, approximate consumption and prices being as follows:—

Manganese dioxide	Bags (100 catties)	$ 9	80 Bags
Lead powder	„ („ „)	7	80 „
Ammonium chloride	„ (168 „)	30	10 „
Lead sheet	Tons (1,680 catties)	200	50 Tons
Carbon sticks	Piculs (100 catties)	₹ 24	560 Piculs
Cardboard	100 sheets.	$ 8	2,800 Sheets

Pig iron is imported from Japan and also takes foundries from in China, selling at 10 cents a pound, while wrought iron is imported from the United States and is sold at 25 cents a pound. Brass is supplied by Chinese sources at from 40 cents to $1 a pound, and steel at 50 cents a pound. Clay comes from either Japan or China, and is sold at $2 a picul. White sand for making electric bulbs is found in Kuangtung and sells at $18 per ton in Shanghai. Lead oxide (red) is a product of the Chen Hua Paint and Varnish Manufacturing Co. (振華油漆公司), the price being $36 per picul. The Yung Li (永利) in Tientsin and the Imperial Chemical Industries (China), Ltd. (卜內門公司) are the two main sources for supplying soda, costing about $35 per picul, and manganese dioxide is

obtainable in Shanghai at $1.50 per picul. The United States is almost the sole supplier of the magnets used in electric fans, the price being about $440 a ton. Solder (Chinese made) costs 60 cents a pound, and American copper 70 cents.

TOTAL OUTPUT

The output of electric manufacturing factories in Kiangsu is as follows:—

	Annual Output (dozen)	Price	Total Value
Flashlights	262,980	$15.4 per doz.	$4,049,892
Accumulators	3,000	40.0	120,000
Batteries	720,000	1.0	720,000
Bulbs	1,817,000	0.2	363,400
Fans	22,000	30.0	664,000
Shades & Bowls	360,000	0.2	72,000
Flat-irons	20,000	4.0	80,000
Sockets	420,000	0.05	2,100

SALES AREA

Flashlights find a ready market in northern China, along the Yangtse River, and in other parts of the interior where electric lighting systems have not been installed. The Straits Settlements and Philippine Islands are also good markets for Chinese electric torches. Batteries go largely to Hankow, Changsha, Chungking, Ichang, Nanchang, and Anking, thence being transhipped to the interior. The sale of bulbs, fans, stoves, and similar appliances is naturally confined to those large ports and cities where power is available.

Flashlights are packed in wooden boxes containing from a score to 100 dozen of cardboard-cased torches. The cost of these is $2 per hundred for the small size. Batteries are also packed in cardboard cases, each containing one dozen small batteries or 36 large ones. When consignments are to be shipped abroad 40 cases are packed in one wooden box. Every 25 electric bulbs are packed in cardboard boxes of 25, 24 of these are packed in one wooden box for export.

CHAPTER XXXVII

MACHINE MANUFACTURE

MACHINES used in manufacturing industries in China are largely imported from abroad. Only until very recently factories engaged in machine manufacture are established. Like other industries Kiangsu is the center of machine shops in this country. Among the most noted machine shops operating in the Province, the Ta Lung (大隆), Wan Chang (萬昌), Ho Hsing (合興), Hsin Chung (新中), Kung Ching (公勤), Chung Hua (中華), Shanghai (上海), Chen Lung (振隆), Kung Mao (公茂), Chung Kuo (中國), and Kuan Chiu (寰球), all in Shanghai, Tzu Sheng (資生) in Nantung, Wan Sheng (萬盛) in Wuchin and Kung I Chang (工藝廠) in Wusih are the best known.

Manufacture of machinery in Kiangsu began in 1850 when British engineers established the Shanghai Dock and Engineering Co. (耶松造船廠) to manufacture and repair machines on steamers. In the following years many steamer-repairing factories were established, and the Chien Chang Factory (建昌銅鐵機器廠) in Shanghai being one of them which is still in operation now. Following its wake were many small factories, but in 1902 the Ta Lung Iron Works, with a capital of $500,000, made its appearance. In Nantung, Chang Chi-chih (張季直), a well known industrialist, established the Tzu Sheng Iron Works (資生鐵廠) with a capital of $200,000. After the advent of the Republic, the increased demand of machinery caused the rapid growing of iron works, and until to-day over 220 iron works are now existing in Shanghai.

Despite the rapid growth of cotton and flour mills in Wusih during the first decade of this century, no modern iron works being established, and machines in these mills were usually sent to Shanghai for repairing. Later, a

foundry was opened to undertake repairing works and in 1919 the Industrial Training Institute (工藝傳習所) was established, but it was closed down three years later owing to financial difficulties. Consequently, the Kung I Iron Works (工藝機器廠), engaged in making agricultural implements, pumps, and liquid fuel engines, was organized. Since then the industry grew steadily until 1928 there were over 100 such works operating in the city. But after 1930 owing to the poor production and the establishment of iron works at Wuhsien and Wuchin a sharp decline in business was seen. The suspension of silk filatures in 1931 and the outbreak of Sino-Japanese hostilities in 1932 further curtailed the business to a considerable extent.

In Wuchin, the first iron works, the Hou Sheng (厚生機器廠) was established in 1913, engaged in making kerosene engines and pumps. For the first seven years, the works did not has a good business, but after 1920 the amount of business handled by this factory has been growing steadily. Since then other iron works made their appearance one after another in response to the increased number of oil and rice mills. In 1927 there were 17 iron works operating in the city.

In other cities such as Chinkiang, Kiangning and Huaiying, small iron works with repairing as principal business were also established during the past few years.

PRESENT CONDITIONS

Large iron works are chiefly composed of planning, moulding, casting, fusing, assembling and fine work departments, but moulding and casting departments being not always found in Shanghai iron works. Although Hou Sheng and Wan Sheng (萬盛) in Wuchin, Tzu Sheng in Nantung and Kung I in Wusih have these two departments, they are all poorly equipped. Wages of operatives range from $12 to $40 per month. Working hours usually begin at 7 o'clock in the morning until 5 o'clock in the afternoon. Night shifts of 3 hours each are paid with a half-day wage and six hours are considered as a day's work. The following table shows some of the particulars of the various iron works now operating in the Province:

SHANGHAI

	Established	Capital	Operatives	Products
Ta Lung (大隆機工廠)	1902	$500,000	500	Spining machines, liquid fuel engines.
Wan Chang (萬昌機器廠)	1906	400,000	51	Refrigerators and accessories.
Chung Kuo ..... (中國機工廠股份有限公司)	1921	250,000	480	Ice making and weaving machines.
Ho Hsing (合興機器製造廠) ...	1919	200,000	350	Steamer repairing.
Kuan Chiu (環球機工廠)	1928	100,000	182	Power-generators, silk-reeling and weaving machines.
Hsin Chung ..... (新中工程股份有限公司)	1925	100,000	174	Liquid fuel engines, pumps, and rice-milling machines.
Kung Ching (公勤機廠)	1921	100,000	100	
San Hsing (三星棉織廠)	1919	60,000	220	Cotton-weaving, iron and copper casting machines.
Hsin Hsiang (新祥機器廠)	1912	60,000	72	Engines, bean-grinding and rice-milling machines.
Chung Hua (中華機工廠)	1925	50,000	80	Rice-grinding, tile, coal-briquette, glass-making, and sawing machines, pumps.
Shanghai (上海)	1930	80,000	48	Pumps, rice milling machines and liquid-fuel engines.
Chen Lung Fu Chi ..... (振隆復記機器廠)	1921	50,000	40	Lathes, and packing machines.
Ho Chi (鶴記機工廠)	1918	50,000	60	Cigarette making machines.
Chu Ya (緒亞機廠)	1927	₸ 50,000	200	Silk reeling and weaving machines.

I Hsing Sheng (義興盛機器廠) ..	1898	$ 30,000	60	Ginning machines.
Tung Hsin (東信機器廠)	1904	30,000	11	"
I Hsin (一新機器廠).....	1918	$ 25,000	50	Cigarette-making machines, liquid fuel engines, and steamer repairing.
Hsin Ta (新大機器廠)	1925	$ 30,000	30	Engines, rice-milling, dyeing and finishing machines, pumps and boilers.
Chung Hua (中華織物機器廠)	1913	$ 20,000	70	Weaving machines and accessories.
Hsin Ming (新民機器廠)	1921	$ 24,000	126	Various kinds of machines.
Hui Chang (滙昌機器廠)	1906	20,000	60	Cotton spinning and knitting machines, electric and steam cranes and engines for steamers.
Hsieh Tai (協泰機器廠)	1896	20,000	39	Dyeing and printing machines.
Shen Ho (愼和機廠)	1917	20,000	50	Various kinds of machines.
Mei Chang (美昌機器廠)	1911	20,000	30	Cigarette making machines and liquid-fuel engines.
Hua Tai (華泰機器廠)	1921	15,000	65	Steamer repairing.
Teh Tai (德泰鐵廠)	1920	16,000	50	Various kinds of machines.
Ta Chang (達昌機器廠)	1927	15,000	29	Cotton-weaving, ginning, flour-milling, and noodle-cutting machines.
Chung Hsing Chang ..... (榮興昌機器廠)	1924	15,000	20	Cotton weaving machines.
Ta Cheng Yu Chi ..... (大成裕記織物機器製造廠)	1921	10,000	65	Weaving machines and accessories.
Yuan Chang Tai (源昌泰機器廠)	1922	10,000	45	Weaving machines and accessories.
Yung Chang (永昌機器廠)	1918	10,000	20	Machines and engines.

Hua Tung (華通機器廠)	1928	10,000	21	Cigarette making machines.
Yuan Ta (遠大鐵工廠)	1926	10,000	20	Trolleys.
Yung Chang (鎔昌機器廠)	1895	10,000	25	Steamer engines.
Ming Sheng (民生機器廠)	1827	10,000	17	Gramophones.
Hsin Tai (新泰機器廠)	1916	10,000	18	Gramophones.
Chun Chang (約昌機器廠)	1899	5,000	36	Silk reeling machines.
Ho Chung (合衆機器廠)	1925	5,000	35	Dyeing, calendering, and weaving machines.
Wu Hsiang Tai (吳祥泰機器廠)	1915	5,000	32	Rice-milling machines, pumps, and liquid fuel engines.
Ching Chang Tai Chi ..... (勤昌泰記機器廠)	1919	5,000	30	Rice-milling and bean grinding machines, pumps, and engines.
I Hsin (一新機器廠)	1920	5,000	12	Rice-milling and bean grinding machines, pumps and engines.
Tien Li Cheng (天利成機器廠)...	1923	5,000	19	Cooton-weaving and noodle-cutting machines.
Hsing Hua Shun Chi (興華順記機器廠)	1919	5,000	26	Lathes, and liquid-fuel engines.
Ming Tai (明泰機器廠)	1923	5,000	26	Rice-milling and bean-grinding machines, pumps, and liquid-fuel engines.
Tai Yuan (太源機器廠)	1925	5,000	23	Rice-milling machines, pumps, and liquid-fuel engines.
Ho Chi (合記鐵工廠)	1925	5,000	22	Cigarette making machines, and motors.
Hua Cheng (華成機器廠)	1921	5,000	18	Drug-making machines.
Huang Teh Tai (黃德泰機器廠) ..	1914	5,000	17	Kerosene & liquid-fuel engines and rope-making machines.
Lee Ming Chi (李明記機器廠)	1916	5,000	17	Fly cotton machines.

Ta Chang (達昌機器廠)	1927	4,000	24	Noodle-cutting machines.
Tung Hsing (東興機器廠)	1930	4,000	40	Silk-weaving machines.
Yuan Tai (元泰機工廠)	1931	3,000	25	Cotton-weaving machines.
Yuan Hsing Chang ..... (源興昌機器廠)	1921	3,000	50	Dyeing machines.
Lu Hsin Hsiang (陸新祥機器廠)	1928	₸ 3,000	36	Thread machines.
Lien Chang (聯昌機器廠)	1923	$ 3,200	31	Cigarette making machines.
Tung Sheng (東昇機器廠)	1926	3,000	26	Noodle-cutting machines.
Tung Hua (東華機器廠)	1912	3,000	20	Cotton-weaving and noodle-cutting machines.
Chin Chang (錦昌機工廠)	1922	3,000	10	Cotton-weaving machines.
Hsieh Hsing (協興機器廠)	1925	3,500	19	Rice-milling, and oil-pressing machines.
Hsieh Tah (協大機器廠)	1912	——	34	Lathes, planers, and borers.
Hua Feng (華豐機器廠)	1924	3,000	17	Rice-milling and bean-grinding machines, pumps, and liquid-fuel engines.
Heng Ta (亨大機器廠)	1918	3,000	15	Ginning, rice-milling, and oil-pressing machines.
Chow Mao Hsing (周茂興機器廠)	1906	3,000	15	Fire-engines.
Hsing Ho (興和機器廠)	1927	3,000	11	Canning machines.
Chang Hsin (匠心鐵針廠)	1926	2,000	21	Hosiery knitting needles.
Chen Ping Chi (陳炳記機廠)	1912	3,000	15	Liquid-fuel engines and other machines.
Hung Hsing (鴻興機器廠)	1921	3,000	10	Lathes, planers, and parts of machines.
I Shun Hsing (益順興機器廠)	1924	1,500	15	Boilers.
Fu Ching (福慶機器廠)	1927	1,000	30	Rubber manufacturing machines.
Chang Yuan Hsiang ..... (張源祥機器廠)	1899	1,800	10	Noodle and ginning machines.

Teh Hsing (德興機器廠)	1928	1,500	19	Various kinds of machines.
Kuo Yuan Lung (郭源隆機器廠)	1926	1,000	7	Rice-milling machines, and liquid-fuel engines.
Chiang Chang Hsing ..... (蔣長興機器廠)	1913	1,000	12	Liquid-fuel engines.
Fow Hsing (阜興機器廠)	1930	3,000	8	Rice-milling machines and pumps.
Liu Yuan Chang Kung Chi ..... (劉源昌公記機器廠)	1921	5,000	9	Liquid-fuel engines, and flour-milling machines.
Mao Chang (茂昌機器廠)	——	2,000	3	Liquid fuel engines.
Pei Sheng (培生機器廠)	1930	5,000	23	Various Kinds of machines.
Hsing Chang (新昌織機廠)	1921	10,000	22	Hosiery-knitting machines.
Hsien Sheng (協盛機器廠)	1925	10,000	20	Silk-weaving machines.
Hua Sheng ..... (華勝製造電力針織機器廠)	1929	11,000	29	Hosiery-knitting machines.
Hsin Chang ..... (信昌針織機器廠)	1921	5,000	16	〃 〃
Lou Chen Hsin (老振興機器廠)	1929	5,000	33	〃 〃
Hsin Kang (新康機器廠)	1923	4,500	22	〃 〃
Lou Chia Hsin (老家興機器廠) ..	1912	5,000	23	〃 〃
Ming Hsin (民興針織機器廠) ..	1921	3,000	30	Cotton-knitting machines.
Chin Hua (錦華廠)	1923	3,000	12	〃 〃
Chiu Hsing (求興機器廠)	1916	3,000	16	〃 〃
Li Chang (利昌製造機器廠)	1931	3,000	20	Hosiery-knitting machines
Li Hsing (利興織造廠)	1921	3,000	14	Cotton-knitting machines.
Kao Chang Kung Chi ..... (高昌公記製造工廠)	——	3,000	16	Hosiery-knitting machines.

Chih Hsin (志興織機廠)	1926	2,000	14	Hosiery knitting machines.
Pai Li (百利織機公司)	1919	2,000	27	Cotton-knitting machines.
Tsai Chi (財記精工廠)	1918	2,000	34	Dyeing, and hosiery-knitting machines.
Chin Hua (錦華織機廠)	1920	2,000	12	Hosiery-knitting machines.
Teng Shun Chang (鄧順紹織機廠)	1913	2,000	26	„ „
Chin Yu (錦昱織機廠)	1920	1,500	13	„ „
Hung Tai (鴻泰織機廠)	1921	2,000	37	„ „
Tung I (統益機器廠)	1931	2,000	25	Jacquard looms
Tien I Ho Chi ..... (天益合記織機廠)	1930	2,000	18	Hosiery-knitting machines.
San Yu (三友織機廠)	1926	2,000	9	Cotton weaving machines.
Chen Chang (鎮鋁機器廠)	1921	2,000	7	Hosiery-knitting machines.
I Chi (義記機械廠)	1921	1,600	12	„ „
Jui Tung Hsing ..... (瑞同興機器工廠)	1926	1,400	11	„ „
Yung Chang (永昌機器廠)	1920	1,500	16	„ „
Heng Hsing Chi Chi ..... (恒興吉記機器廠)	1920	1,000	16	„ „
Hua K'e (華克機器廠)	1928	1,000	18	„ „
Hsieh Chang (協昌機器廠)	1929	1,000	15	„ „
Chin Yu (錦餘機器廠)	1921	1,000	15	„ „
Shih Yeh (實業織機廠)	1924	1,000	11	„ „
Cheng Hsing (成興織機廠)	1918	1,000	9	„ „
Ma Kia Hsing (馬家興機器廠) ...	1912	1,000	5	„ „
Yung Tai (永泰織機廠)	1924	1,000	8	„ „
Ching Hsing (競新織機廠)	1926	1,000	8	„ „

Cheng Chang (正鋁機器廠)	1931	3,000	12	Ricksha accessories.
Fu Chang (福昌機器廠)	1926	3,000	14	Machine parts
Yung Chang (永鋁機器廠)	1928	3,000	15	Ricksha wheels.
Fu Lai (福來機器廠)	1927	2,000	8	Motor car parts.
Kung Hsing Hsieh Chi ..... (公興協記機器廠)	1930	1,000	9	Parts of flour--milling machines.
Tai Chu Yuan (戴聚源鐵工廠) ...	1894	1,000	8	Parts of ginning machines.
Yung Tai (永泰銅鐵機器廠)	1929	1,600	5	Parts of printing machines.
I Ta (一大機器廠)	1926	3,000	65	Parts of Cotton spinning machines.
Ta Chang (大昌機器廠)	1926	5,500	20	" " " " "
Chang Wan Hsing (張萬興機器廠)	1898	1,500	4	" " " " "
Fa Chang (發昌機器廠)	1928	2,500	22	Machine parts
Lee Hsing Chi (李興記機器廠)	1930	2,200	6	" "
Ming Hsing Ho Chi ..... (明星合記機器廠)	1928	2,000	10	Ricksha accessories.
Tzu Yu (自由機器鑄工廠)	1931	2,000	10	Ricsha wheels.
Shun Hua (順華機器製造廠)	1921	28,000	25	Machine repairing
San Pei (三北機器廠)	1923	15,000	90	" "
Chin Chang Hsiang .... (晉昌祥機器廠)	1920	10,000	40	" "
Fa Tung (發動機器廠)	1930	8,000	28	" "
Shan Kung (善工五金廠)	1918	7,000	15	" "
Kung Mao (公茂機器廠)	1888	100,000	40	Machine parts.
Ta Ming (大明機器廠)	1930	7,000	21	Machine repairing.
Hsin Li Chiu Chi ..... (新利久記機器廠)	1917	6,000	18	" "

Yu Hsing (有興機廠)	1921	2,000	7	Hosiery knitting machines.
Chien Yeh (建業機器廠)	1930	25,000	32	Printing machines.
Ming Ching (明精機器廠)	1916	30,000	73	" "
Yao Kung Chi (姚公記機器廠) ..	1915	10,000	53	" "
Yao Hsing Chang (姚興昌機器廠)	1909	10,000	23	" "
Shun Chang (順昌機器廠)	1915	6,000	16	" "
Kung Sheng (公盛製造機器廠).....	1929	6,400	20	" "
Chen Ta Ching (陳大慶機器廠)	1921	5,000	14	" "
Ch'ien Hsin (謙信機器廠)	1929	5,000	17	" "
Jui Tai (瑞泰機器廠)	1917	5,000	22	Printing and casting machines.
Chi Wen (啓文機器廠)	1926	5,000	7	Punching machines.
Wei Chu Cheng (魏榮成機器廠) ..	1912	3,000	18	Printing and paper-cutting machines.
Wong Yung Hsing (王榮興機器廠)	1925	3,000	11	Printing machines.
Teh Hsiang (德祥印刷機器廠)	1926	1,200	9	" "
Hsieh Hsing (協興機器廠)	1923	2,000	24	" "
Yung Hsing (湧興印刷機器製造廠)	1924	1,000	8	" "
I Tai Hsing (義泰興機器廠)	1925	1,000	8	Parts of printing machines.
Ming Chang (明昌機器廠)	1919	20,000	90	Parts of machiness.
Ch'u Shun Hsing (鋤順興機器廠)	1921	10,000	32	" " "
Chin Chang (金昌機器廠)	1919	10,000	51	Parts of machines for steamers.
Hsin Ho Chung (新合衆機器廠)	1929	5,000	14	Machine parts
Kuang Tai (廣泰機器廠)	1901	5,000	14	Machine parts
Shen Chang (申昌機器廠)	1919	3,000	25	Parts of reeling machines.
Shen Fu (慎孚機器廠)	1930	4,000	18	Fire engines and accessories.
Tzu Feng Sheng Chi ..... (慈豐製記機器廠)	1921	3,000	16	Wheels.

Li Hua (利華機器廠)	1931	1,000	7	———
Cho Chun (卓軍機器廠)	1925	6,000	41	Machine repairing.
Wan Hsing Hsieh Chi ..... (萬興協記機器廠)	1921	5,000	28	" "
Tsai Tao (彩道機器廠)	1910	5,000	45	" "
Yung Chang Fa (榮昌發機器廠) ..	1927	5,000	30	" "
An Tai (安泰機器廠)	1921	5,000	55	" "
Lin Chang (林昌機器廠)	1919	5,000	17	" "
Wan Shun Huai Chi ..... (萬順懷記機器廠)	1917	5,000	23	" "
Ku Wan Hsing ..... (顧萬興機器廠)	1928	5,000	11	" "
Kung I Hsieh Chi ..... (公益協記機器廠)	1922	5,500	20	" "
Ching Chang (經昌機器廠)	1912	₹ 5,000	52	" "
Hua Cheng (華成機器廠)	1922	$ 5,000	15	" "
Hsin Hua (新華機器廠)	1923	5,000	32	" "
Heng Chang (恆昌機器廠)	1921	4,000	28	" "
Shih Heng Mao ..... (史恆茂機器廠)	1911	4,000	13	Repairing of steamer engines.
Chih Feng (熾豐機器廠)	1891	4,000	15	Machine repairing.
Yung I (永益機器廠)	1923	4,000	32	" "
Ta Hsing (達興機器廠)	1923	4,000	14	" "
Ho Chang (合昌機器廠)	1881	3,000	20	" "
Sheng Hsiang (生祥機器廠)	1924	3,000	5	" "
Yung Sheng (永盛機器廠)	1917	3,000	14	" "

Yu Shun (裕順機器廠)	1925	3,000	20	Machine repairing.
Wan Hsing (萬興機器廠)	1925	3,500	7	" "
Kao Yung Hsing (高永興機器廠) .	1919	3,000	22	" "
Ma Yuan Shun (馬源順機器廠)	1921	3,000	31	" "
Yu Sen (裕森機器廠)	1928	3,000	15	Repairing of silk-reeling machines.
Mao Chang (茂昌機器廠)	1928	3,000	10	Repairing of steamer engines.
Cheng Tai Ho Chi ..... (承泰合記機器廠)	1926	3,000	24	Machine repairing.
Hsing Chi (興記鐵工廠)	1927	2,500	16	" "
Sheng Yeh Hsiang ..... (聖業祥五金機器廠)	1930	2,500	16	" "
Yung Yuan (永元機器廠)	1925	2,000	18	" "
Pao Tung (寶通機器廠)	1920	2,000	15	" "
Ma Shun Hsing ..... (馬順興機器廠)	1923	2,000	16	" "
Jui Chang (瑞昌機器廠)	1913	2,000	8	" "
Yu Chang Sheng ..... (裕昌生機器廠)	1923	2,000	16	" "
Lin P'ei Chi (林培記機器廠)	1919	2,000	13	" "
Hui Chang Hsiang ..... (惠昌祥機器廠)	1925	2,000	7	" "
Chen Hsing An Chi ..... (振興安記機器廠)	1921	1,500	21	" "
Chiang Shun Chang ..... (蔣順鋁機廠)	1926	2,000	10	" "
Yu Hua (裕華器械廠)	1921	2,000	20	" "

I Chang (義昌鐵廠)	1907	2,000	26	Machine repairing
Chang Hung Chang (張鴻昌鋼鐵機器廠)	1904	2,000	4	Repairing of silk reeling machines.
Hsiang Chi (祥記機器廠)	1929	1,500	5	Machine repairing.
Mao Hsing (茂興鋼鐵廠)	1922	1,500	16	Electric apparatus.
Yun Chang (雲昌機器廠)	1917	1,500	12	Machine repairing.
Chen Hua (震華鐵工廠)	1926	1,000	8	" "
Teh Chi (德記機器廠)	1927	1,000	7	" "
Teh Chang (德昌機器廠)	1930	1,500	8	" "
Hsing Li (興利機器廠)	1926	1,000	13	" "
Wong Chin Chi (王錦記機器廠) ..	1927	1,000	9	" "
Ta Sheng (大生機器廠)	1925	1,000	22	" "
Hsia Shun Chang (洽順昌機器廠)	1915	——	9	Machine parts.
Chow I Hsing (鄒義興鋼鐵機器廠)	——	——	6	Miscellaneous Machine.s
Ho Hsing Hsiang (合興祥機器廠)	1927	1,000	6	" "
Yuan Chang (源昌廠器機)	1919	1,000	9	Machine repairing.
Ho Hsing (合興機器廠)	1929	1,000	6	" "
I Tai (義泰機器廠)	1922	3,000	20	" "
Jui Tai (瑞泰機器廠)	1931	1,000	3	Silk-weaving machines.
		WUSIH		
Shih Yeh (實業鐵工廠)	1926	$13,000	—	Liquid fuel engines, pumps, fire engines, and coal briquette machines.
Chen Tan (震旦機器廠)	1929	10,000	60	Liquid fuel engines, pumps, and rice-milling, bean grinding, flour-milling machines, and fire-engines.

Kung I (工藝機器廠)	1919	20,000	90	Liquid fuel engines, pumps, and rice-milling, cocoon-drying machines, fire engines, and silk-reeling machines.
Ta Hsin (達昌機器廠)	1927	6,000	17	Liquid fuel engines, pumps, and rice-milling, and flour-milling machines.
Yung Hsing (永興機器廠)	1919	6,000	—	" " "
Ho Chung (合衆機器廠)	1930	5,000	20	" " "
Yü Pao Chang (余寶昌機器廠)	1929	5,000	13	" " "
Kuang Chin (廣勤鐵工廠)	1929	5,000	33	Machine parts and repairing.
Hua Sih (華錫機器廠)	1929	4,500	12	Liquid-fuel engines, pumps, and rice-milling, flour-milling, and weaving machines.
Hsiang Hsing (祥興機器廠)	1929	4,500	12	Engines, pumps, & rice-milling machines.
Hsieh Hsing (協興機器廠)	1919	3,700		" " "
Hua Hsing (華興鐵工廠)	1927	2,500	23	Liquid fuel engines, and rice-milling, flour-milling, and weaving machines, and pumps.
I Tai (怡泰機器廠)	1926	2,000	13	Liquid fuel engines, and rice-milling machines, and pumps.
Hsiao Ch'ih Chang (蕭熾昌機器廠)	1920	1,600	5	Rice-milling machines and pumps.
Wusih (無錫鐵工廠)	1926	1,500	8	Machine rapiring.
Lo Heng Hsing (陸恒興機器機) ...	1927	2,500	10	" "
Fu Hsing Sheng (復興盛器器機) ..	1931	1,500	13	" "
Chou Shun Hsing (周順興機器廠)	1930	2,000	12	" "

Chen Hsing (振興機器廠)	1931	800	9	Machine repairing
Li Mao (立茂機器廠)	1929	1,500	17	〃 〃
Fa Hsing (發興機器廠)	1926	5,000	23	〃 〃
Hsieh Chang (協昌機器廠)	1928	4,500	21	〃 〃
Pu Ming (普明機器廠)	1926	4,500	12	〃 〃
Tai Huai Yuan (戴惠源機器廠)..	1924	1,000	13	〃 〃
Jui Yuan (瑞源機器廠)	1926	1,500	17	〃 〃
Jung Hsing (榮鑫機器廠)	1930	2,000	17	〃 〃
Chen Jui Chang (陳瑞昌機器廠)..	1930	1,500	13	〃 〃
Jui Chang (瑞昌機器廠)	1927	3,000	21	Hosiery-machines and noodle cutting machines and parts thereof.
Jung Chang (榮昌機器廠)	1922	1,000	8	Boilers and parts of steamer engines.
			11	Building materials for bridge and other construction works.
Hsieh Sheng (協盛機器廠)	1930	2,500		
Wong Yun Lung (黃雲龍機器廠)..	1930	1,000	9	〃 〃 〃
Ho Hsing (合興機器廠)	1915	700	7	〃 〃 〃
Hsieh Chu Hsing (謝聚興機器廠)	1930	1,000	10	〃 〃 〃
Ho Hsing (和興機器廠)	1931	1,500	9	〃 〃 〃
Wei Hsing (渭鑫機器廠)	1912	3,000	14	〃 〃 〃
Chen Yung Chang (陳榮昌機器廠)	1930	2,000	11	〃 〃 〃
Shen Hsing Chi (沈興記機器廠)..	1919	10,000	31	〃 〃 〃
Tung I Chang (董義昌冷作)	1930	1,000	15	Boilers and steamer engines.
Wong Yung Chang (黃永昌冷作)..	1926	1,500	19	〃 〃 〃
Chen Sen Chang ..... (鄭森昌機器木模廠)	1919	800	8	Wooden moulds.

WUCHIN

Hou Sheng (厚盛鐵工廠)	1920	30,000	126	Engines, pumps & rice-milling machine.
Hou Sheng (厚生製造機器廠)	1913	15,000	296	Engines, pumps, oil-pressing, dredging & weaving machines.
Ping Ming (平民工藝廠)	1927	40,000	120	Pumps and cotton weaving and spinning machines.
Kung Wu (工務機器廠)	1924	10,000	22	Machine repairing.
Hsing Tah (興大機器廠)	1931	5,000	11	„ „
Ta Ko (大可機器廠)	1931	3,000	11	„ „
Tang Yung Chang (唐榮昌機器廠)	1926	3,000	30	„ „
Hua Ta (華達機器廠)	1930	3,000	16	„ „
Ta Sheng (大生機器廠)	1930	2,500	7	„ „
Wan Cheng (萬成機器廠)	1927	1,800	12	„ „
Hsin Sheng (新盛機器廠)	1930	1,000	11	„ „
Yung Ta Chang (榮大昌機器廠)	1929	1,000	8	„ „
Chiu Ching (求精機器廠)	1930	1,000	7	„ „
Wan Sun (萬森機器廠)	1931	1,000	5	„ „
Chün Yuan (駿源機器廠)	1930	1,000	9	„ „
Chung Hua (中華機器廠)	1924	1,000	9	„ „

		NANTUNG		
Tzu Sheng (資生鐵廠)	1906	₮200,000	110	Weaving, oil-pressing and rice & wheat milling machines.
Chuan Chang (全昌機器廠)	1920	9,000	34	Machine-repairing.
Yung Chang (榮昌機器廠)	1930	900	5	" "
Hsin Chang (信昌機器廠)	1926	1,000	5	Hosiery-knitting machines.
		NANKING		
Sheng Chang (勝昌機器廠)	1894	$3,000	19	Machine-repairing.
Yung Hsing (永興機器廠)	1930	1,000	22	" "
Hsieh Chang (協昌機器廠)	1931	24,000	32	Engines, pumps and flour-milling machines.
		CHINKIANG		
Pao Chang (寶昌機器廠)	1913	$5,000	16	Machine-repairing.
Ho Hsing (合興機器廠)	1916	4,000	10	" "
Hsin Ming (新民機器廠)	1916	4,000	15	" "
Mao Chang (茂昌機器廠)	1913	2,000	20	" "
		HUAIYING		
Chen I Shun (陳義順機器廠)	1916	₮1,000	15	Weaving, ginning and noodle-cutting machines.
Lee Ta Ch'uan (李大全機器廠)....	1927	500	7	" " "

RAW MATERIALS

Iron and steel are the principal raw materials for making machines. German silver, tin, lead, antimony, and aluminium are next in importance. Iron used in machine making is known either as grey "Hsien Tieh" (灰銑鐵) or white "Hsien Tieh (白銑鐵), the former is greyish in color, with coarse grains and comparatively soft, while the latter is silvery white in color and very hard and brittle in nature. Owing to its comparative softness grey "Hsien Tieh" is used almost exclusively in manufacturing machines, but on account of its poor tensile strength, white "Hsien Tieh" is used in its stead in many cases. Besides a small portion from the Ta Yeh Iron Mines (大冶鐵鑛) "Hsien Tieh" is almost exclusively supplied by the Japanese. Wrought iron, made from inferior grade of "Hsien Tieh," contains very small percentage of carbon, about 0.25 per cent. Owing to its intense tensile strength, it is one of the principal raw materials in machine making. The Hanyang Iron Works (漢陽鐵廠) turns out cheap wrought iron which is much demanded by machine manufacturers. As the output being limited, British and Swedish goods are imported to make up the deficiency.

Steel is of many varieties. Common steel usually contains carbon from 0.05 to 1.5 per cent, the higher the percentage, the finer will be the grains, and higher the degree of hardness. Steel with less than 0.3 per cent of carbon is known as "soft" steel, while that over 0.3 per cent is known as "hard" steel. The former is soft, tensile, and malleable, being used to make axes, shafts and parts which stand constant wear and tear, and it is also indispensable in making chimney, troughes, etc. Owing to its high tensile strength "hard" steel is used to a quite large extent in manufacturing machines. In addition to the two varieties of steel just mentioned, nickel steel, chrome steel, and vanadium steel are also considered as important raw materials. Ninety per cent of the steel used in machine manufacturing industry in China are imported from the United States, Germany, Great Britain and Austria, while the remaining 10 per cent are supplied by various local iron works.

Alloys of copper and German silver are used to make machine parts which meet frequent friction and corrosion. Aluminium is used for manufacturing light but durable machines.

Besides a small portion supplied by Chinese iron Works, copper, tin, German silver, antimony, lead, and aluminium used in machine making in China are imported from abroad. "Hsien Tieh" and wrought iron are respectively sold at $7 or $8 and $10 per picul. Steel is generally sold at $12 per picul. The price of brass is $28 per picul, bronze $50, tin $130, and lead from $14 to $220. The value of raw materials supplied to various iron works in Kiangsu are as follows:—

	No. of Factories	Value of Raw Materials Annually Required
Engines	41	$340,000
Pumps	23	40,000
Noodle-cutting machines	8	9,000
Weaving machines	18	120,000
Silk-reeling machines	3	109,000
Rice-milling machines	14	11,000
Flour-milling machines	5	27,000
Ginning machines	9	113,000
Cotton-spinning machines	5	50,000
Oil-pressing machines	6	20,000
Cigarette machines	5	20,000
Knitting machines	39	74,320
Machine-repairing tools	102	290,000
Printing machines	16	22,900
Machine parts	22	150,000
Others	—	130,000
Total		1,526,220

MANUFACTURE

Engines made by the factories given in the above list are run either by liquid fuel, kerosene, solar oil, coal, or charcoal the power varies according to the structure of the engine and the fuel used. The Ta Lung, Kuan Chiu, and Shanghai Iron Works have the largest output, each turning out over 100 engines annually, while Hsin Chung makes about 80 engines a year, Chung Hua, I Hsin, and Hsin Ming 35 each. According to the estimate of authority in the line the aggregate annual output of the 23 iron works in Shanghai is over 800 engines of over 15,000 h.p..

a year, valued at $750,000. The total output from the 17 iron works in Wusih, Kiangning, and Wuchin is over 300 engines of over 3,000 h.p., valued at $150,000.

There are 14 iron works engaged in manufacturing rice-milling machines in Kiangsu, their output ranging from 20 to about 60 machines annually. The total output is over 470 machines valued at $32,900 averaged at $70 each.

Pumps made in China are mostly of the centrifugal type. There are 23 factories in Kiangsu engaged in making pumps, the annual output from Wusih being 175, Shanghai 127, Wuchin 360, and Kiangning 300, making a total of 962 machines, valued at $130,500. Raw materials consumed by those iron works for pump making is estimated at about $40,000 a year.

There are only three iron works in Shanghai—the Ku Teh Chi (顧德記), Liu Yuan Chang (劉源昌), and Kung Chi (公記)— and one in Nantung and Kiangning, the Tsu Sheng (資生) and Hsieh Chang (協昌)—engaged in making flour-milling machines. The annual output from the five factories is over 100 machines valued at about $90,000.

There are altogether eight iron works manufacturing noodle-cutting machines. With the exception of two in Huaiying they are all in Shanghai. Among the eight factories the Chang Yuan Hsiang (張源祥) in Shanghai turns out the largest portion of the product, about 450 machines a year, while the total output in Kiangsu is about 1,200 machines, valued at $24,000.

The Tung Hsin (東信) factory in Shanghai is the most well-known iron works for manufacturing ginning machines. Although Chow Mao Hsing (周茂信) Ta Cheng Yu Chi (大成裕記), I Hsing Sheng (義興盛), Ta Chang (達昌), Chang Yuan Hsiang in Shanghai and Lee Ta Chuen (李大全) and Chen I Shun (陳義順) in Huaiying are also famous for their products. The annual output from Tung Hsin alone is from 30 to 600 machines, while for all the rest combined, 1,080. Calculating on the value of $24 per machine the total output is valued at $47,200. If the parts of machines are also computed, the business handled by these iron works will amount to the value of $247,200 a year.

The Chung Hua (中 華), Ta Cheng Yu Chi, Chu Ya (鑄 亞); and Tung Hsing in Shanghai manufacture silk-weaving machines, while Chung Kuo (中國), Ta Lung (大 隆), San Hsin (三 星) Chuen Hsing Chang (泉 興 昌), Tien Li Cheng (天利成), Ta Chang (達 昌), Yuen Tai (元 泰), Tung Hua (東 華), Chin Chang (錦 昌), Ho Chung (合 衆) in Shanghai, Hou Sheng (厚生) and Ping Ming (平 民) in Wuchin, and Lee Ta Chuen and Chen I Shun in Huaiying make cotton-weaving looms. At present about 2,120 silk-weaving machines valued at $126,000, are manufactured every year, almost one-half of which being the products of Chung Hua and a quarter, the products of Ta Cheng Yu Chi. The annual output of looms is 4,650 valued at $1,238,400 with the San Hsin, Chung Kuo, Ta Chang, and Ta Lung the largest producers.

Among about a score of cotton-spinning machine manufacturers the Ta Lung, Chung Kuo, Hui Chang (匯 昌) of Shanghai, Tsu Sheng of Nantung, and Ping Ming of Wuchin are the most famous. Their output is valued at $120,000 a year.

Of the $352,700 worth of silk-reeling machines the Kuan Chiu's share alone is $250,000, with Chu Ya and Chün Chang (鈞 昌) next in importance. The aggregate output of oil-pressing machines in Kiangsu is 25 machines a year, valued at about $50,000. Among the five iron works making cigarette machines in Shanghai Shih Hao Chi (史 鶴 記) is the largest, turning out almost one-half of the total output —30 machines a year—while Hua Tung (華 通), I Hsing (一 興), Mei Chang (美 昌) and Lien Chang (聯 昌) contribute the other half. The total output is valued at about $53,000. Iron works engaged in making lithographic presses in Shanghai are 16 in number. Their output is estimated at about 760 machines per year, their prices ranging from $70 to $500, with a total work of $238,000.

With the exception of the Jui Chang of Wusih and Hsin Chang of Nantung knitting-machine manufacturing factories are all in Shanghai. The 39 factories in Kiangsu make 15,768 machines a year, valued at about $254,400. Hsin Chang (新 昌), Chin Hua (精 華), Ming Hsin (民 新), Hsin Kang (新 康), and Hsieh Sheng (協 盛) are the large producers of handlooms, their capacity being over 1,000 looms a year, while Hua Sheng (華 勝), Li Chang (利 昌),

etc., are turning out quite a large number of power-driven machines, about 40 machines from each factory a year. For machines making shawls, gloves, and "Russian" caps Chiu Hsing, Li Hsing, and Teng Hsing Chang are quite famous.

Of the $467,900 worth of machine parts produced by the 22 iron works in Shanghai the Ming Chang factory alone contributes $170,000, while the share of Chin Chang is $60,000, Tzu Feng $40,000, Shen Fu and Chu Shen Hsing $30,000 each, while the rest less than $30,000 each.

The number of iron works engaged exclusively in machine-repairing are 67 in Shanghai, 14 in Wusih, 13 in Wuchin, 2 in Nantung and 6 in Kiangning, with a total of 102 in the whole Province. The total annual output amounts to $1,519,400, of which Shanghai's share being $1,255,400, Wusih $82,000, Wuchin, $115,000, Chinkiang $39,000, Kiangning $16,000 and Nantung $12,000. The following table shows the amount of business handled by a number of large iron works engaged in machine-repairing:—

Shun Hua	Over	$100,000
San Pei	„	100,000
Cho Chun	„	100,000
Chin Chang Hsiang	„	50,000
Kung Mao	„	50,000
Hsin Li	„	20,000
Chiu Chi	„	20,000
Wan Hsing	„	20,000
Tsai Tao	„	20,000
Jung Chang	„	20,000
An Tai	„	20,000
Chin Chang	„	20,000
Heng Chang	„	20,000
Yu Shun	„	20,000
Yu Sen	„	20,000
Cheng Tai	„	20,000
Yuan Yuen	„	20,000
Ma Shen Hsing	„	20,000
Lin Pei Chi	„	20,000
Wong Chin Chi	„	20,000

A summary showing the number of various kinds of machines annually produced in Kiangsu Province, together with their aggregate value, is tabulated as follows:—

	No. of Iron Works.	No. of Machines Turned Out	Value of Output
Engines	40	1,200	$ 900,000
Rice-milling Machines.....	14	470	32,900
Pumps	23	962	135,000
Flour-milling Machines ..	5	100	90,000
Noodle-cutting Machines ..	8	1,200	24,000
Ginning Machines & Parts	9	960	247,200
Weaving Machines	18	6,769	1,364,400
Spinning Machines	5	——	120,000
Silk-reeling Machines	3	——	352,700
Oil-Pressing Machines	6	25	50,000
Cigarette Machines	5	60	53,000
Printing Presses	16	760	238,000
Knitting Machines	39	15,768	254,400
Machine Parts	22	——	467,900
Machine-repairing	102	——	1,519,400
Others	—	——	500,000
Total	—	——	6,348,900

MARKETS

Engines made in Kiangsu, with the exception of about 100 made by the Wan Sheng Iron Works in Wuchin exported to the Straits Settlements and Philippine Islands, are all sold in China especially in Kiangsu and Chekiang. The following table shows the various marketing places of engines made by Kiangsu iron works:—

	Location	No. of Machines Sold	Sold to.
Hou Sheng	Wuchin	35	Hunan, Kiangsi
Kung I	Shanghai		,, ,,
Hsin Hsiang	,,		,, ,,
Wu Hsiang Tai	,,		,, ,,
Hsin Hsiang	,,	25	Fukien, Kuangtung
Tai Ynen	,,		,, ,,
Shanghai	,,		,, ,,
Kung I	,,		,, ,,
Chen Tan	,,	15	Honan, Shantung
Shih Yeh	Wusih		,, ,,
Chen Tan	,,		,, ,,
Kung I	,,		,, ,,
Hou Sheng, etc.	Wuchin	—	Szechuen

Knitting machines are largely sold to Shanghai plants with a small portion going to other ports as follows:—

	No. of Machines	Value	Sold to
Heng Hsing Chi ... Pai Li ... ... Hung Tai...	1,400	$16,000	Hankow
Teng Shun Chang ... Chin Yu	700	$ 9,000	Tientsin
San Yu	500	$ 6,000	Hangchow
Chin Hsiu	—	—	Szechuen, Hongkong
Hsing Chang	—	—	Anhui
Ming Hsin	—	—	Straits Settlements, Philippine Islands

A certain portion of printing machines from Kung Sheng Iron Works in Shanghai is shipped to the Straits Settlements and Philippine Islands, while the remainder is sold in Shanghai, Hankow, Tientsin, Nanking, Chinkiang, Wuhsien, and Foochow. Pumps and rice-milling machines go principally to rice-producing districts in Kiangsu, Chekiang, and Anhui. Ready markets for silk-weaving machines are found also in Kiangsu and Chekiang, but the products from Chung Hua are sometimes sold in Honan, Kuangtung, and Shantung. Cotton-weaving machines are sold mainly to Shanghai and its environs, but cotton-weaving factories in Chekiang, Anhui, and Shantung occasionally buy machines from Kiangsu. Ta Chang is the only factory that sells its products as far as Fukien, Kuangtung, and Szechuen. Among ginning-machine manufacturing factories Tung Hsin Iron Works is the best known and has the largest field of business, their products being sold to Shasi, Hankow, Tientsin, and Nantung.

The following table shows the price, weight, and dimension of some kinds of machines turned out by Kiangsu iron works:—

	Dimensions	Weight (lbs)	Price
Kerosene Engines (2 h.p.)	37"×23"×24"	300	$ 310
„ „ (4 h.p.)	42"×27"×25"	400	350
„ „ (6 h.p.)	49"×29"×29"	610	510
Liquid-fuel Engines (9 h.p.)	40"×46"×50"	2,000	900
„ „ (12 h.p.)	40"×52"×58"	2,400	1,060
„ „ (18 h.p.)	46"×60"×60"	3,000	1,600
„ „ (24 h.p.)	50"×67"×62"	3,600	2,000

Liquid-fuel Engines (36 h.p.)	52"×72"×64"	4,500	3,000
Pumps (4 in.)	24"×16"×1"4	100	130
„ (5 in.)	25"×19"×18"	220	180
„ (6 in.)	29"×22"×21"	290	220
„ (8 in.)	44"×30"×32"	750	280
„ (10 in.)	50"×34"×38"	1,000	350
Rice-milling Machines (No. 3)	——	——	₮ 55
„ „ „ (No. 6)	——	——	82
Grain-hulling Machines	46 in. high, 48 in, broad	1,200	$ 500
„ „ „	50 in. high, 38 in. broad	480	400
„ „ „	46 in. high, 20 in, broad	650	320
„ „ „	44 in. high, 24 in. broad	480	280
Planers	——	——	₮ 450
Weaving Machines	——	1,700	300
Lathes (6 feet)	——	——	600
„ (6 feet)	——	——	880
Borers (0.4 in. hole)	——	——	80
„ (1.5 in. hole)	——	——	450
Printing Machines	——	——	$70–500
Ginning Machines	——	——	24– 30
Noodle-Cutting Machines	——	——	20– 26
Knitting Machines	——	——	12–200

TRANSACTIONS

Transactions of business in iron works are largely done by the brokers of the works, but sometimes customers buy direct from the works. Spot goods are paid on delivery, while forward transactions are paid by two or three installments, the first installment being paid when signing the contract, the second on delivery, and the last payment is made when the installation of the machine is finished.

Expanses for packing are to be paid by the buyer. The rate is $8 for a 4-h.p. engine, $22 for 12-h.p., and $24 for 16-h.p., and 35 for 20 or 25 h.p. engines. Transport of the machines is handled by the buyer, but the factory can undertake transportation for customers on condition that the latter will bear all the expenses. If the machine is to be installed by the seller, all fares, lodging and boarding expenses are to be borne by the buyer.

CHAPTER XXXVIII

FOUNDRY

FOUNDRIES in Kiangsu are concentrated in the southern part of the Province, where a total of 51 factories are operating, with 35 in Shanghai, 13 in Wusih, and one each in Nantung, Chinkiang and Tsingpu. A brief description in each of the cities is given below:—

Shanghai.—Established in 1890 the Shun Chi Foundry (順記翻砂廠) is the first of its kind found in Shanghai. Following this pioneer works saw the opening of many others. At present there are 35 factories operating in the city, with an aggregate capital of $249,900. Other particulars are tabulated as follows:—

	Organization	Capital	Established	Product	Value of Annual Product
Wan Chang (萬昌鍛鋼鐵廠)	Limited Liability	₸ 60,000	1924	Liquid-fuel engines, pipes	$35,55
I Hsing Shen (義興愼翻砂廠)	Private Ownership	$ 30,000	1898	Various kinds of machines	60,000
Hung Ta (洪大翻砂廠)	Partnership	10,000	1920	" " " "	60,000
Yuan Tai (源泰翻砂廠)	"	6,000	1928	Machine parts	50,000
Yung Chang (湧鋁翻砂廠) ...	Private Ownership	4,000	1921	" "	24,500
Yuan Chi (元記翻砂廠)	Partnership	4,000	1920	" "	13,600
Chiu Ta (久大翻砂廠)	"	3,000	1931	" "	——
Yung Shen Hsing (榮愼興翻砂廠)	"	3,000	1930	Various kinds of machines	36,000
Hsiang Shun (祥順翻砂廠) ...	Private Ownership	3,000	1926	Pipes	65,000
Yung Hsing Hsiang (永興祥翻砂廠)	Partnership	3,000	1923	Machines and parts	43,200
Li Tai (利泰翻砂廠)	Private Ownership	3,000	1928	" " "	16,800
Chen Hsing (振興翻砂廠) ...	" "	2,000	1930	" " "	1,200
I Chang (益昌翻砂廠)	Partnership	2,000	1930	Machine parts	13,600
Hsiang Hsing (祥興翻砂廠) ..	Private Ownership	2,000	1924	" "	65,000
Wong Fu Chi (王福記翻砂廠)	" "	2,000	1929	Pig iron articles	15,000
Kao Chang (鎬昌翻砂廠)	" "	2,000	1902	Wrought iron articles	28,000
Fa Hsing (發興翻砂廠)	" "	1,600	1929	Machine parts	8,500
Yung Chang (榮鋁翻砂廠) ...	Partnership	1,600	1928	Press, pipes	32,000
I Jen Hsing (義仁興翻砂廠)	"	1,500	1927	Machine parts	28,000

Yuan Shen Hsing Ching Chi (遠生興慶記翻砂廠)	Partnership	1,000	1927	„ „	14,000
Tsao Hui Hsing (曹滙興翻砂廠	„	900	1925	Steamer engines and spinning machines	3,000
Hua Fa (華發翻砂廠)	Private Ownership	500	1929	Machine parts	15,000
Hsin Ta (信大翻砂廠)	„ „	400	1931	Parts of hosiery knitting machines	——
Hsing Yung Chang (邢永昌翻砂廠)	„ „	5,000	1928	Machines and parts	47,500
Hsieh Hsing (協興翻砂廠)	Partnership	40,000	1921	Various kinds of machines	45,000
Chi Cheng (志成翻砂廠) ...	„	5,000	1931	Machine parts	2,700
Wong Chin Chi (黃金記冶房) ..	Private Ownership	500	1930	Miscellaneous	6,000
Hsi Chang (錫鋁翻砂廠) ...	„ „	5,000	1921	Parts of machines & pipes	25,000
Yu Shen (裕生翻砂廠)	Partnership	2,500	1930	„ „ „	1,600
Hsieh Cheng Yuan (協成源翻砂廠)	„	3,600	1926	Various kinds of machines	30,000
Hsieh Shun (協順翻砂廠)	„	4,000	1919	Various kinds of machines and pipes	30,000
Shun Chang (順昌翻砂廠) ...	„	4,000	1890	Rough Castings	10,000
Yang Shen Chi (暘生記廠砂翻)	Private Ownership	700	1922	Machines parts	7,000
Fu Chang (福昌翻砂廠)	Partnership	4,000	1927	Various kinds of machines	28,800
Wan Hsing Hsieh Chi (萬興協記翻砂廠)	„	6,000	1930	„ „ „	38,800

Among the factories listed above the I Hsing Shen has the largest number of workers, employing over 40 men, while Hung Ta and Hsieh Hsing, over 30 each and Hsieh Shun, Wan Chang, Wong Fu Chi, and Yung Shen Hsing over 20 each. Only men workers are employed, and they are mostly natives of Ningpo and Shaohing. In addition to regular workers there are usually six or seven apprentices working together with their masters. Workers in Yuan Tai Foundry receive the highest wage, $54 a month, while those in Yung Hsing Hsiang and Li Tai get about $48 a month. Apprentices are generally paid with 70 or 80 cents a month with a bonus or $5 to $6 at the three festivals of the year.

As far as equipment is concerned Wan Chang is the most advanced, having four motors with a total power of 62 h.p., and 7 melting furnaces. The equipment of the factory worth about Tls. 20,000 and the building, Tls. 10,000. Other foundries have only one or two motors varying from 1.5 h.p. to 15 h.p. and the capacity of their melting furnaces ranges from one-half to five tons.

Wusih.—Out of 13 foundries in Wusih only eight are now in operation. The largest one, Cheng Tai, (成泰) has a capital of only $3,000 with 15 workers. No motor is fixed in any one of those foundries. Their organization, capital, outputs, etc., are as follows:—

TABLE B.

	Organisation	Capital	Workers	Established	Product	Value of Annual Output
Cheng Tai (成泰)	Private Ownership	$3,000	15	1929	Various Kinds of machines & parts	$6,500
San Hsin (三新)	Partnership	2,000	13	1929	,, ,,	4,500
Hsin Kung Chi (新公記)	Private Ownership	2,500	14	1928	,, ,,	7,000
Hua Sheng (華盛)	Partnership	2,000	11	1930	,, ,,	3,500
Hsiang Tai (祥泰)	,,	2,500	13	1931	,, ,,	6,500
Yung Shun (永順)	,,	2,000	19	1930	,, ,,	2,500
Yung Hsing (永興)	,,	1,500	8	1926	,, ,,	4,800
Chang Hsing Chi (昌興記)	Private Ownership	1,500	8	1932	,, ,,	4,500

Nantung.—The Ken Chi Ho Hsing Chang (謙記合興昌翻砂廠) is the only foundry in Nantung. It was established in 1927 with a capital of $1,500. It is equipped with one diesel engine of 6 h.p. and a few moulds and bellows. The works employs 12 workers, mostly natives of Nantung and Ningpo.

Chinkiang.—The only one foundry found in Chinkiang is the Hsing Chang Works (興昌翻砂廠), which was established in 1926 with a capital of $1,500. The annual output, which consists chiefly of steamer engines and rice-milling machines, is valued at $20,000. The total number of operatives employed is 20.

Tsingpu.—As in Nantung and Chinkiang, Tsingpu has only one foundry, the Kung Chi Works (公記翻砂廠). It was established in 1930 and capitalized with $5,000. Its output is valued at $18,000 annually. There are 4 staff members and 14 workers.

RAW MATERIALS

Raw materials used in Kiangsu foundries consist of pig iron, scrape iron, iron dust, brass, copper, coke and sand. Their sources of supply and prices are as follows:—

	Source of Supply	Price		
Pig iron	Liaoning	$66	per	ton
	Penchihu (本溪湖) & Maanshan (馬鞍山)	70	,,	,,
	India	96	,,	,,
	the United States		——	
	Shansi		——	
Scrape iron	Local iron *hongs*	$80	per	ton
Iron dust	Local machine shops		——	
Brass	Shantung	$24	per	picul
Copper	——	$ 5	,,	,,
Coke	Kaiping Coal Company	$27	per	ton
	Chung Hsing Coal Company	$40	,,	,,
Sand	Nanking	$6-$8	,,	,,

Pig iron is the most important raw material used in casting industry. In Shanghai alone about 500 tons is consumed monthly. According to a recent investigation about $700,000 worth of raw materials are consumed annually by all the foundries in the Province.

Among the factories listed above the I Hsing Shen has the largest number of workers, employing over 40 men, while Hung Ta and Hsieh Hsing, over 30 each and Hsieh Shun, Wan Chang, Wong Fu Chi, and Yung Shen Hsing over 20 each. Only men workers are employed, and they are mostly natives of Ningpo and Shaohing. In addition to regular workers there are usually six or seven apprentices working together with their masters. Workers in Yuan Tai Foundry receive the highest wage, $54 a month, while those in Yung Hsing Hsiang and Li Tai get about $48 a month. Apprentices are generally paid with 70 or 80 cents a month with a bonus or $5 to $6 at the three festivals of the year.

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Chang Hsing Chi (昌興記)	Private Ownership	1,500	8	1932	,, ,,	4,500

Nantung.—The Ken Chi Ho Hsing Chang (根記合興昌翻砂廠) is the only foundry in Nantung. It was established in 1927 with a capital of $1,500. It is equipped with one diesel engine of 6 h.p. and a few moulds and bellows. The works employs 12 workers, mostly natives of Nantung and Ningpo.

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	the United States		—·—	
	Shansi		——	
Scrape iron	Local iron *hongs*	$80	per	ton
Iron dust	Local machine shops		——	
Brass	Shantung	$24	per	picul
Copper	——	$ 5	,,	,,
Coke	Kaiping Coal Company	¥27	per	ton
	Chung Hsing Coal Company	$40	,,	,,
Sand	Nanking	$6-$8	,,	,,

Pig iron is the most important raw material used in casting industry. In Shanghai alone about 500 tons is consumed monthly. According to a recent investigation about $700,000 worth of raw materials are consumed annually by all the foundries in the Province.

CHAPTER XXXIX

PRINTING

SINCE the formation of the Republic, a rapid development has taken place in the printing industry, which has grown ten-fold in the last twenty years. Printing houses are now found everywhere in the country and their number is particularly numerous in this Province. Shanghai, the business center and the most populous city in the country, has the largest number of printing houses, their business amounting to more than ten million dollars annually. In recent years, with the "New Thought" movement in full swing and the consequent publication of a vast number of newspapers, magazines and books, the spectacular progress made in the printing industry is quite natural. The establishment of many new colleges and schools also contributes to the expansion of this industry.

The art of wood block printing in China dates back to more than a thousand years ago. In the time of the Sung Dynasty, it reached its stage of perfection and books printed during that period are now highly valued by collectors. Type printing was invented in this country not much later, but had not been popular until the introduction of the Western method. During the last quarter of the 19th century, several lithographic printing houses began to appear in Shanghai and their products were warmly welcomed by the public. Lead type printing was introduced at about the same time, but, on account of the cheapness of the *lien ssu* paper (連史紙), a kind of Chinese paper particularly good for lithographic printing, it was much less popular. In the beginning of this century, however, type printing began to gain in popularity owing to Japanese influence. It was used by many of the larger printing houses. Colored lithographic printing was also introduced during this period. Since the beginning of the Republic, owing to the great development in the cigarette industry in China, off-set printing machines have been

widely used. According to the latest statistics, there are more than a hundred off-set machines in Shanghai alone.

At present, though modern printing is well developed in China, only a very few Chinese printers can take up work of a comparatively intricate nature, such as the printing of bank-notes, bonds and stocks. Embossed blocks, photographic plates, etc., can be supplied only by a few large Chinese printers like the Commercial Press and the Chung Hua Book Company. Most of the machinery, printing ink and paper come from abroad, and the imports of these articles have been increasing every year.

In recent years, printing in China has developed from an handicraft into a very complicated mechanical industry. This Province, being far more advanced in culture and education has the largest number of printing houses, particularly in Shanghai. These printing houses make plates, cast types and print either for themselves or for customers. The following table includes all printing houses in this Province with a capital of more than $10,000:—

	Location	Capital
The Commercial Press	Shanghai	$3,000,000
Thomas Chu & Sons ..... (文瑞印書館)	„	30,000
Chung Hua Book Company	„	2,000,000
Chun I & Li Kuo ..... (均益利國聯合印刷總公司)	„	30,000
Hua Sheng Lithographic Press .... (華勝石印局)	„	120,000
Wen Hua Art Printing Co. ..... (文華美術印刷公司)	„	60,000
Great Eastern Book Co. ..... (大東書局)	„	400,000
San I Printing Co. ..... (三一印刷公司)	„	200,000
Ta Yeh Printing Co., Ltd. ..... (大業印刷公司)	„	50,000
Tien I Co., Ltd (天一公司)	„	300,000
Shih Tai Printing Co. ..... (時代印刷公司)	„	70,000
China Embossed Block Co. ..... (中國凹凸印刷製版公司)	„	50,000

The World Book Co. (世界書局印刷所)	Shanghai	715,270
Asia Lithographic Press (亞洲石印局)	„	15,000
Tung Shang Lithographic Press (通商五彩石印公司)	„	16,000
Fu Hua Co. (福華五彩橡皮印刷公司)	„	20,000
Ta Shen Printing Co. (大生橡皮印刷公司)	„	30,000
Chung Hua Printing Co. (中華印書館)	„	200,000
Hsu Shun Chi (徐勝記)	„	40,000
Wen Pao (文寶橡皮印刷所)	„	30,000
Mei Shing Printing Co. (美星印刷所)	„	50,000
Hsieh Shun Printing Co. (協順印刷所)	„	30,000
Far East Printing Co. (遠東橡皮印刷公司)	„	50,000
Hsieh Chi Printing Co. (燮記橡皮印刷公司)	„	50,000
Lu Shan Plate-Making Co. (廬山彩色製版社)	„	20,000
The Eastern Plate-Making Co. (東方彩色製版印刷公司)	„	50,000
Liang Yu Co., Ltd. (良友圖書有限公司)	„	100,000
Hua Mei Printing Co. (華美印書館)	„	80,000
Hua Kuo Printing Co. (華國印刷所)	„	20,000
Kuo Kuang Printing Co. (國光印書局)	„	20,000
Hsieh Hsin Printing Co. (協興印刷公司)	„	15,000
Wu Chen Chi (吳承記)	„	20,000
Hung Wen (宏文)	„	20,000
Shan Wen (善文)	„	70,000
Chin Hsing (競新)	„	20,000
Ming Kuang (民光)	„	10,000
Chin Mei (競美)	„	30,000
Chai Chang Offset Printing Co. (彩彰)	„	40,000
Ta Feng Offset Printing Co. (大豐)	„	15,000
New China Offset Printing Co. (新中華)	„	15,000

Hua Ta Offset Printing Co. ..... (華 大)	Shanghai	14,000
Chen Ta Offset Printing Factory (正 大)	„	10,000
World Offset Printing Co. ..... (世 界)	„	10,000
Hua Shang Offset Printing Co. .... (華 商)	„	10,000
Shi Hsing Book Co. ..... (世新書局印刷所)	„	10,000
Shing Kuo Ming Printing Co. .... (新國民)	„	20,000
Hua Feng Printing & Streatype Co. (華豐印刷鉛字所)	„	100,000
Hsing Yih Printing Co. ..... (新 業)	„	12,000
Sheng Chou Kuo Kuang Shai ..... (神州國光社)	„	40,000
Chung Yuan Book Co. ..... (中原書局印刷廠)	„	20,000
Printing Plant, Hsieh Chang Can Manufacturing Co. ..... (協昌機器製磚印刷廠)	„	10,000
Printing Department, Sin Wan Pao (新聞報有限公司印刷部)	„	1,200,000
Printing Department, Eastern Times (時報館印刷部)	„	700,000
Printing Depart., China Times .... (時事新報印刷部)	„	500,000
Printing Depart., Sun Pao ..... (申報館印刷部)	„	1,500,000
Li Li Printing Co. ..... (立利印刷股份有限公司)	„	12,000
The Scientific Printing Factory (科學印刷廠)	„	60,000
Sen Sen Art Co. (生生美術公司)	„	40,000
Shanghai I Chen Printing Co. .... (上海儀成印刷局)	„	30,000
The Pacific Printing Co. ..... (太平洋印刷公司)	„	30,000
Yuan I Printing Co. ..... (元益印刷公司)	„	20,000
Nanyang Printing Co. ..... (南洋印刷有限公司)	„	15,000
Yu Wen Commercial Printing Co. .. (有文商業印刷公司)	„	15,000

The Great Shanghai Printing Co. .. (大上海印刷所)	Shanghai	12,000
Shen Hua Printing Co. ..... (盛華印書館)	„	10,000
Yi Hsin Printing Co. ..... (逸興)	„	10,000
The Central Printing Co. ..... (中央興記)	„	10,000
Chen Hsien Printing Co. ..... (正興)	„	10,000
Shi Mei Printing Factory ..... (益美)	„	10,000
Chen Hsin Printing Co. ..... (中外)	„	10,000
Hsin Fa Printing Co. ..... (興發)	„	10,000
Chen Hsin Printing Co. ..... (振興)	„	10,000
Yuan Li Printing Co., Ltd., ... (元隆)	„	50,000
Chi Chen Printing Co. ..... (集成製本所)	„	20,000
Printing Department, the Central Kuo Ming Tang Head-quarters (中央黨部印刷所)	Nanking	160,000
Nanking Printing Co. ..... (南京)	„	30,000
Chin Hua Printing Co. ..... (京華)	„	60,000
The Central Daily News ..... (中央日報社)	„	50,000
The Continental Printing Co. .... (大陸印書館)	„	50,000
Jen Teh Printing Co. ..... (仁德)	„	10,000
Mei Feng Hsiang Printing Factory (美豐祥)	„	25,000
Hua Tung Printing Co. ..... (華東印務局)	„	18,000
Sih Chen Printing Co. ..... (錫成)	Wusih	20,000
Chung Hua Printing Co. ..... (中華)	„	30,000
Hsieh Chen Printing Co. ..... (協成)	„	20,000
Ming Seng Printing Co. ..... (民生)	„	20,000

Chung Hua Printing Co. (中華)	Wusih	20,000
Chung Hsing Printing Co. (中興)	Wuhsien	15,000
Ta Su Printing Co. (大蘇)	"	15,000
Li Su Printing Co. (利蘇)	"	15,000
Wen Hsing Printing Co. (文興)	"	25,000
Cheng Chung Printing Co. (振華)	Wuchin	15,000
Hsing Su Printing Co. (新蘇)	Chinkiang	10,000
Kiang Nan Printing Co. (江南)	"	20,000
Printing Factory, Provincial Gov. (省政府印書館)	"	25,000
Hsing Chung Hua Printing Co. (新中華)	Tungshan	20,000
Hsing Hsu Printing Co. (新徐)	"	15,000
Yuan Chang Printing Factory (元章)	"	15,000

The total capital of the 98 printing houses listed above amounted to $13,629,570. If that of the smaller ones —those with capital of less than $10,000 each—are included, the amount will be more than $20,000,000.

A printing house in this Province usually consists of four departments, the administrative, printing, business and proof-reading department. The printing department deals with printing, casting and setting of types, making of plates, and lithographic printing, etc.

Nearly all modern printing machinery can be found in the printing houses of this Province. Most of these machines, however, are imported, only a few simpler varieties being manufactured in China. The Chinese products are much inferior to those imported in efficiency and durability. Although they are used by some of the smaller printing houses for their low price, they are in no position to compete with imported machines.

Most of the workers in the printing houses are men, very few women and children being employed. Wages are paid either monthly or by piece rate. A timerate worker gets from $10 to $60 a month, and according to piece rate, a type setter is paid from 60 to 70 cents per page, a printer, about $2 per 1,000 pages, and a binder, from 80 to 90 cents per 10,000 leaves. The average working period is 10 hours a day, but during busy times, night shifts are introduced.

Most of the materials used in printing come from abroad. Although paper and ink are now manufactured to a certain extent in China, but in quality and quantity, Chinese products cannot be compared with imported goods.

The exact annual business done by the various printing houses is unknown. With the exception of a few printers who cast their own types and make their own plates, the rest being mostly job printers, having no definite amount of work. According to those in the trade, the total business turnover of all the Chinese printing houses in Kiangsu Province, capitalized over $10,000, is estimated approximately about $18,000,000.

CHAPTER XL

PRINTING INK

ALTHOUGH the art of printing was invented in China in the later part of the Tang Dynasty, this great contribution to culture did not make any marked development until missionaries from Europe came to this country and brought with them Western methods of printing. During the last century there has been a very wide adoption of mechanical printing processes followed in Europe and America, and naturally an increasing import of printing-ink accompanied this development. Most of the modern printing-works are established in Shanghai, and at first only black printing-ink was imported, but later inks of all colours were bought by Chinese printers. The main sources of supply were Germany and Japan, but prior to the World War the California Ink Co., an American firm, opened an office in Shanghai, hoping to enter a market which was dominated by German products. During the war, however, European shipments greatly declined or stopped entirely, which opportunity was immediately taken advantage of by American exporters, whose inks began to find favour among Chinese printers, and the products of other countries had to give place to the new competitor in the field.

During the war there was a shortage of printing-ink, and it was this state of affairs which induced many Chinese to start manufacturing, but their efforts did not bring about any significant increase in the supply of ink, owing to the small scale of operation. The first printing-ink enterprise of real importance was the factory established by the Commercial Press, Ltd., which produced many

varieties of ink with the assistance of a German adviser. The product of this factory was at first only intended to meet the requirements of the Commercial Press, but with increased output the company was soon able to supply the market with all kinds of ink of high quality. This factory was destroyed during the Sino-Japanese hostilities of 1932.

SHANGHAI FACTORIES

Generally speaking, the printing-ink industry in China is far from being a mature enterprise, the capital invested being small and the output limited. The following table gives details of the factories in Shanghai, there being none in other parts of Kiangsu Province:

	Established	Capital	Workers
Chung Yuan Shao Chi (中原紹記)	1917	$10,000	12
Heng Cheng (恒成)	1920	5,000	12
Tung Wen (通文)	1923	15,000	15
Yung Woo Industrial Co. (永和實業公司)	1927	120,000	—
Chun Ta (駿大油墨廠)	1929	100,000	28
He Yung (鶴永油墨廠)	1932	5,000	3
Ling Sheng Co. (靈生油墨公司)	——	20,000	6
I Hua (益華五新油墨廠)	——	——	—
Kung Sheng (公盛油墨廠)	1931	60,000	27
World Book Co. (世界書局)	1931	——	3
Hua Chiang (華强油墨廠)	——	10,000	—

The factories listed above are all small concerns and details regarding a few others are lacking. In the case of the Yung Woo Industrial Co. and Chun Ta Co., printing-ink is only one of their many products.

The machinery used in the above factories is mostly manufactured in Chinese ironworks, costing about one-fourth the price of imported machinery. The capacity of a mixing-machine is from 100 to 130 pounds per day of ten hours, while for fine inks the output is only half that amount, as a machine runs much slower with the thicker mixture. There are about 40 ink-making machines in Shanghai.

The total number of workers engaged in this industry is about 100, and as the process of manufacturing is simple, little skill is needed. Wages range from $25 to over $60 a month while apprentices receive about $5 with lodging and board supplied by the employer. The average working day is 10 hours, with 28 working days in a month.

RAW MATERIALS

The materials used in manufacturing printing-ink consist of oils, dyes, and varnishes, the latter being made from linseed-oil from Kalgan. Other materials include the following:—

Tung Oil—Imported from Chekiang, in barrels of 100 catties, costing about Tls. 20 per barrel.

Linseed Oil—Imported from Kalgan, costing about $40 per picul.

Hung Oil (紅油), a residual of petroleum, sold at about $80 per ton, only used in making cheap inks.

Dyes—Mostly imported from Germany. Prices vary with color and quality, and purchases are made in units of either 100 catties or in kilogrammes, though Chinese buyers prefer to buy in piculs.

Ink Powder—Mostly an American product, in boxes of 187½ pounds and 325 pounds. Domestic supplies come

from Fukien, Huichow (徽州) and Wenchow, costing about 40 cents per pound.

Resin—For use in making cheap inks, costing about Tls. 8 per picul.

Manganese Carbonate—Used in making fine quality colored inks, bought from Ningpo at about Tls. 30 per picul.

Varnish—Prices vary with quality, ranging from 20 to 90 cents per pound.

OUTPUT AND PRICES

Printing-ink may be classified in four categories, according to the particular purpose for which it is used, as follows:—

1. Newspaper and book inks—The price of the former ranges from 10 to 30 cents per pound, and the latter from 30 to 60 cents.

2. Lithographic inks—Black inks sell at from 50 cents to $1 per pound; red at 80 cents to $1.50, with best quality red at Tls. 4; Yellow, about $1; blue, 90 cents to $1.60, with royal blue the most expensive; green, 80 cents to $2.00; purple, about $2.20.

3. Off-set inks—Inks used for off-set printing are of various colours, including red, blue, yellow, green, purple and black. Black ink is similar in quality and price to that for lithographic use. Red and blue off-set inks are sold at between $2 and $3 a pound, yellow from $1, and green from $2, sometimes going as high as $4.

4. Mimeographic inks—Black, red, and blue inks are used for mimeograph work, black selling at about 50 cents and the other two colours at about $1.

The annual output and brands produced by Shanghai factories are as follows:—

	Products	Brands	Output (Pounds)
Chung Yuan Shao Chi	Black Inks	"Bell & Armour"	200,000
Heng Cheng	Black Inks & Varnishes	"Wild Goose"	60,000
		——	60,000
Tung Wen	Inks of all colours	"Pin Shih" (品式)	300,000
		"San Huan" (三環)	——
Yung Woo	All kinds of printing Inks	"Girl in Moon'	120,000
Tsun Ta	Inks of all colours	"Chun" (駿)	200,000
He Yung	Printing Inks	"Black Bear"	72,000
Ling Sheng	Inks of all colours, Mimeograph Inks, Varnishes	"Camel"	158,400 (Estim)
Cho Hsin	Inks	"Cho Hsin (作新)	——
I Hua	Inks of all colours	——	——
Kung Sheng	Printing and Mimeograph Inks	"Three Stars"	500,000 (Approx)
Chung Kuo	Printing Inks	——	——
I Ta	Printing Inks	——	——
Pe Fu	Printing Inks	"Pe Fu" (百福)	——
Chen Hua	Mimeograph Inks	——	——

HOME AND FOREIGN MARKETS

The product of the Chung Yuan Factory are sold along the Yangtse River and in Kuangtung, Kuangsi, and Shanghai, annual sales being 170,000 pounds, with a total value of $150,000.

Heng Cheng inks are consumed locally.

The Tung Wen factory supplies the local market, Yangtse ports, Tientsin, Nanking, Hangchow Tsingtao, etc., sales amounting to 270,000 pounds annually, of a total value of $200,000.

Yung Woo inks are principally sold in Shanghai, with some export to other places, the output being 80,000 pounds annually, with a total value of $40,000.

The Chun Ta products are mostly sold in Shanghai and Tientsin, to the amount of 150,000 pounds annually, with a total value of $120,000.

He Yung and Kung Sheng inks meet the local demand, with the last-named also exporting to the Straits Settlements and Hongkong.

Shanghai is the chief market for local-made printing-ink, taking almost three-quarters of the total product. In 1931 foreign printing-ink re-exported from Shanghai to other China ports was valued at Tls. 70,000, the remainder, about Tls. 52,000, being consumed locally.

CHAPTER XLI

EDUCATIONAL SUPPLIES

THE MANUFACTURE of educational supplies—such as laboratory equipment, stationery, musical instruments, and toys—is an infant industry in this country. In 1911 the Commercial Press started to manufacture educational toys, and a year later was followed by the Kiangwan Model Toy Factory (江灣模範玩具廠), this marking the beginning of the industry in China. The manufacture of laboratory equipment and celluloid models was started seven years later, in 1919, but at the beginning was faced with many difficulties because of lack of capital and technical experience. During the period following 1919 many factories started but quickly failed, and the surviving concerns were not on a large scale. In Kiangsu Province almost all the factories were located in Shanghai.

The manufacture of equipment for physics and chemical laboratories was concentrated upon reproducing lines imported from foreign countries, particularly Japan, very few being improved or designed by Shanghai makers. During the 1932 hostilities all the factories in Chapei were destroyed, and only the Hsin Ya Company (興亞) was able to place orders for machinery from Germany to rebuild its factory after the fighting.

Stationery made by Chinese factories is also closely imitative of foreign imports, and a new line was put on the market each time a boycott occurred, because of the demand for these goods. A large quantity of stationery supplies were imported from Japan, but since the Manchurian dispute Japanese goods have not been favored in the

Chinese market, and there is now an opportunity for developing the home market, in spite of the fact that the exchange value of Japanese currency has dropped many points. The condition of this industry is comparatively favorable, and is still developing.

The wholesale trade in Chinese-made laboratory equipment and stationery supplies is in the hands of book-stores who manufacture part of their stocks or have an interest in the factories producing the lines they handle. Factories making educational supplies are all small-scale concerns, and a large proportion of these goods are still imported. The Commercial Press and the Chung Hua Book Company, with their large capital, obtain stocks direct from foreign factories, but ordinary wholesale stores get supplies from various foreign importers in Shanghai.

Checkers (both Chinese and foreign style) were among the first lines made in China, and educational toys are practically all copies of foreign articles. The demand for Chinese-made toys has increased year after year, and foreign makes are being replaced by Chinese because the latter can be sold so much cheaper.

The toy industry is divided into two general sections—mechanical and celluloid or chemical toys, and both lines are made in many factories in Shanghai.

The toy trade was first started by the Commercial Press and the Kiangwan Model Toy Company, and in 1916 the Chen I Company (振藝) began to manufacture drums and dumb-bells. The venture, however, was not successful, and work was suspended a year later. It was not until 1919, when the Ai Kuo Mechanical Toy Company (愛國機製玩具公司), located in Singapore Road, was established, that Chinese factory was in a position to manufacture toys on a large scale, making this an independent business. This company is now the largest of its kind

kind in the country. Another mechanical toy factory, the China Toy Company (中國玩具公司) was established in the winter of 1920, since when many small factories have been started. Hand-made toys made of tin, such as horse-wagons, aeroplanes, etc. were first made by the Chiao Heng Kang Company (焦衡康公司) of Hung Fu Li (鴻福里) Hsiangshan Road (香山路), and Wei Shun Chi (魏順記), Rue de Consulat, in the French Concession, Shanghai.

The celluloid industry was started in Shanghai in 1919 by the Yung Woo Industrial Company (永和實業公司), which first manufactured toys and eyeglass frames. In 1921 a chemist, Mr. Hsu Jen Lin (徐仁麟), started a private research laboratory in connection with the celluloid industry. As a result of successful effort in research work, he succeeded in establishing the Kuo Kuang Artificial Ivory Factory (國光人造象牙廠) in 1925. Two other chemists, Mr. Chiang Chun Yen (姜俊彥) and Mr. Sun Hung Chen (孫洪成), returned from studies in Japan and started the Great China Celluloid Manufacturing Company (大中華賽璐珞製造公司) in 1928. This marked the actual beginning of celulloid-making in this country, and before 1928 there was no definite Chinese term for the word "celluloid," Mr. Chiang being the first to coin the expression "Shai Lu Lo" (賽璐珞) which means "more beautiful than jade and pearls." Following the Great China Company three other factories were started, the Chinese Ping Pong Company (中國乒乓公司), the Great China Company, and the Shanghai Celluloid Company. The celluloid industry has thus a good foundation in China for future development.

The manufacture of musical instruments, however, is far behind the toy industry. Only pipe-organ building has been started in Shanghai, and the production of instruments is very limited.

The quality of Chinese-made educational supplies cannot be considered satisfactory or up to the standard of foreign goods, although the industry has been established more than twenty years. The quantity, too, cannot meet the demand, and large part of the supplies consumed in this country consist of foreign imports. The 60 factories in Shanghai, the largest of which has a capital of $100,000 while the smallest has only $1,000, are all working on a small scale and are not in a position to supply the local market, nor compete with foreign manufacturers.

Makers of educational supplies in the Province may be divided into three main groups: chemical, mechanical, and hand-work. For scientific equipment a large proportion is partially made by machinery, being finished by hand. The manufacture of stationery requires machinery and hand-labor, envelopes and other lines are made by hand. Drums and toys are made only by machinery, and therefore belong to the mechanical industry. Celluloid is a chemical industry, but a factory usually utilizes its machinery to turn out several by-products, such as rubber-stamps and other stationery supplies. The Chinese Ping Pong Company, however, manufactures nothing but toys.

Investigation shows that in Kiangsu Province there are 11 factories for manufacturing laboratory equipment; 32 for stationery supplies; seven for pipe-organs; and 11 toy factories. They are practically all located in Shanghai, and detailed statistics of their activities are as follows:

LABORATORY EQUIPMENT FACTORIES

	Organization	Capital	Established
Hsing Ya (興亞製造廠)	Incorporated	$ 35,000	1932
Hsieh Hsing (協興運動器製造廠)	Partnership	10,000	1928
Hua Kuo (華國化學玻器製造廠)	Incorporated	20,000	1932
Chung Hua (中華儀器廠) (of the Chung Hua Book Co. Ltd.)	"	——	——
Chung Kuo (中國儀器廠)	Partnership	10,000	1932 Reorganized
Asia Model Factory (亞洲模型廠)	Individual	5,000	1931
Ching I (精藝標本製作所)	"	——	——
Chung Hua Medical Equipment Co. (中華醫科器械公司)	——	——	——
Ta Li Sporting Goods Co. (大利球拍廠)	Individual	9,000	——
China Industrial Factory (中國實業機器製造廠)	Incorporated	10,000	1932

STATIONERY SUPPLIES FACTORIES

	Organization	Capital	Established
Kuang Hua Industrial Co. (光華工業社)	Partnership	$ 3,000	1932
Kuan Le Min Fountain pen Co. (關勒敏自來水筆公司)	Incorporated	150,000	1926

Ta Chung Hua Fountain pen Co. (大中華自來水筆公司)	——	——	——
Hua Fu Golden Pen Factory (華孚金筆廠)	Partnership	60,000	1932
Han Lai Company (漢萊公司)	Individual	——	1929
Chung Hua Industrial Factory (中華工藝廠)	Partnership	4,000	1911
Chen Hua Fa Chi (振華發記文具廠)	Individual	3,000	1908
Chin Yeh Co. (勤業文具公司)	Inc.	5,000	1921
Hsin Feng Waxed Paper Co. (新豐蠟紙廠)	Partnership	8,000	1932
Cho Hsin Waxed Paper Co. (作新蠟紙廠)	Inc.	4,000	1928
Li Chung Co. (利中鋼版廠)	Inc.	1,000	1931
Li Wen Co. (利文工藝廠)	Inc.	10,000	1932
Pao Chuan Co. (保權工藝廠)	Individual	——	1930
Min Shen Ink Co. (民生墨水廠)	Partnership	10,000	1925
Ta Hua Industrial Co. (大華實業社)	〃	50,000	1931
Eastern Industrial Co. (東方實業公司)	Inc.	10,000	1932
Li Wen Ink Co. (利文墨水廠)	Individual	5,000	1932
Chung I Chemical Co. (中一化工廠)	Partnership	5,000	1922
Tien Jan Ink Co. (天然製墨廠)	Individual	5,000	1901
Kang Shen Ink Co. (康生墨水廠)	〃	2,000	1919
Ma Li Co. (馬利工藝廠)	Partnership	20,000	1919

Chin Chen Co. (金城工藝社)	Individual	2,000	1929
Hou Sheng Co. (厚生橡皮廠)	"	3,000	1932
Ming Li Co. (民立文具廠)	"	4,000	1927
Eastern Chemical Co. (東方化學廠)	——	——	——
Ma Kiang Co. (馬江公司)	Partnership	50,000	——
Yung Liang Co. (永亮圖紙廠)	Individual	——	——
Min Sheng Industrial Co. (民生工藝廠)	Inc.	——	——
Chia Ting Envelope Co. (家庭信封廠)	Partnership	5,000	1932
Hsing Yeh Co. (興業文具廠)	Inc.	5,000	——
Hu Kai Min Ink Co. (胡開明墨廠)	Individual	5,000	1909

PIPE-ORGAN FACTORIES

	Organization	Capital	Established
Shanghai Pipe Organ Co. (上海)	Partnership	$ 9,000	1924
Pei Ya Co. (伯牙)	"	5,000	1925
Ta Hua Co. (大華)	"	5,000	1925
Lü Chen Co. (律成)	"	3,000	1925
Hua Ching Hsiang Co. (華慶祥)	"	5,000	1923
Min Feng Co. (鳴鳳)	Individual	5,000	1922
Hua Hsing Co. (華興)	Inc.	5,000	1926

MECHANICAL AND HAND-MADE TOYS FACTORIES

	Organization	Capital	Established
Hsin I Co. (新藝)	Partnership	$ 5,000	1931
Chinese Checker Co. (中國棋子公司)	Inc.	5,000	1931
Ai Kuo Mechanical Toys Co. (中國)	—	—	1919
Chinese Mechanical Toys Co. (中國)	—	—	1930
Chiao Heng Kang Co. (角衡康)	—	—	—
Wei Shun Chi Co. (魏順記)	—	—	—

CELLULOID TOY FACTORIES

	Organization	Capital	Established
Great China Celluloid Co. (大中華)	Incorporated	$100,000	1928
China Ping-pong Co. (中國乒乓公司)	"	100,000	1929
Kuo Kuang Artificial Ivory Co. (國光人造象牙廠)	—	—	—
Shanghai Celluloid Co. (上海)	—	—	—
Great China Chemical Co. (大中國)	—	—	—

The above tables do not include small establishments of a handicraft type, except perhaps the last two companies in the fourth table. The Commercial Press and the Chung Hua Book Co. are large and well-known publishing concerns, and are therefore omitted altogether from the report.

Retail and wholesale business in educational supplies excluding the Commercial Press and the Chung Hua Book Co. is largely in the hands of Scientific Apparatus Company (科學儀器館) the I Hsin Educational Supply Co. (益新教育用品社), Wen Hsin Educational Supply Co. (文新教育用品社) the Ho Chi Educational Supply Co. (合記教育用品社) and the Yu Hsin Stationery Supply Co. (育新文具用品社) details of which are as follows:

	Capital	Established	Annual Business
Scientific Apparatus Co.	$100,000	1903	$400,000
I Hsin Co.	20,000	1921	800,000
Wen Hsin Co.	10,000	1930	100,000
Ho Chi Co.	10,000	1909	200,000
Yu Hsin Co.	50,000	1921	700,000

The factories in the above group employ a total of approximately 2,000 workers, most of whom are men and children, very few women being employed except in the envelope and ink factories. Wages are usually paid on a monthly basis, although a few are employed by the day or hour. Wages for men vary from $6 to $12 a month; and women from $9 to $12, the factories usually providing lodging and board for men, but not for women. Hours range from 7 to 10 daily, and when factories have rush orders necessitating overtime, six hours count for one day, and three hours for a half-day.

SUPPLIES OF RAW MATERIAL

According to statistics compiled by the Great China Celluloid Co., the materials used for the celluloid industry in Shanghai were all imported except camphor, which is obtained from Fukien. Tin-plate was practically all imported from Japan, but since the Manchurian trouble has been replaced by European supplies. The raw materials used for both mechanical and chemical branches of the industry are listed as follows:

MECHANICAL RAW MATERIALS

	Country of Origin
Steel	Belgium and Austria
Cast Iron	China
Copper	"
Steel wire	——
Lead wire	——
Pipe-organ Flute	Germany
Wood	China
Glass materials	China and Germany
Rubber	South Sea Islands
Dyestuffs	Germany
Varnish	China
Shellac	——
Leather	China
"Ivory" Paper	Germany
Rubber-cloth	U.S.A.
Ramie	China
Ulmus campestris	"
Tinned Plate	U.S. and England
Wax	China
Paper	"

CHEMICAL RAW MATERIALS

	Country of Origin
Soda Ash	China
Lead	"
Manganese powder	"
Antimony powder	"
"Pen" lead	"
Hydrochloric Acid	"
Powder	——
Celluloid, white	Japan and Germany
Celluloid, colored	" "
Alcohol	Java and Japan
Camphor	China
Nitricized cotton	Japan and Germany

In the above table celluloid is listed as a raw material, but alcohol, camphor and nitricized cotton may be considered as the materials for making "raw material," because they are important elements in the celluloid compound. Nitricized cotton can only be purchased in limited quantity under regulations issued by the Ministry of War and factories using this material are always faced with the problem of short supply.

MARKETING CONDITIONS

The total annual output of the whole industry has an average of a little over two million dollars in value, and sales reach all parts of the country and the Straits Settlements. The market for celluloid goods has been very favorable, and the output of ping-pong balls alone ranges from four to five thousand dollars per month. The chief market is Canton where there is always a demand for celluloid articles. The freight charge for shipment from Shanghai to Canton is from five to six dollars per 100 cubic feet. The following statistics show the production, value, and market of various products.

Factories	Articles produced	Value	Principal Market
Hsing Ya	Laboratory equipment	——	China
Hsieh Hsing	Sporting goods	——	„
Hua Kuo	Chemical glass	——	„ and South Seas
Chung Kuo	Scientific equipment	$ 50,000	Shanghai
Asia Model Factory	All kinds of models	10,000	„
Ching I	All kinds of samples	10.000	„
Ta Li	Tennis-balls	30,000	China and Japan
China Industrial Factory	Chinese typewriters	——	„
Hu Kai Min Ink Co.	Chinese inks	8,000	„
Pao Chuan Co.	Stationery	——	„
Min Shen Ink Co.	Ink and pastes	——	„ and South Seas
Ta Hua Industrial Co.	Stationery	——	„
Eastern Industrial Co.	„	26,000	„
Li Wen Co.	Ink and paste	——	„
Chung I Co.	Stationery	7,000	„
Tien Jan Co.	Ink and paste	100,000	„
Kang Sheng Ink Co.	Fountain pens and ink	50,000	„
Ma Li Co.	Stationery and paint	130,000	„
Chin Chen Co.	Paints and ink	20,000	„
Kuang Hua Co.	Stationery	20,000	„
Kuan Le Min Co.	Fountain pens	1,000,000	„
Ta Chung Hua	„ „	——	„
Hua Fu Co.	„ „	——	„
Sheng Ta Co.	Celluloid pens, etc.	——	„
Shanghai Co.	Pipe organs	40,000	„
Pei Ya Co.	„ „	20,000	„
Ta Hua Co.	„ „	20,000	„

Lu Chen Co.	" "	20,000	China and South Seas
Hua Hsing Hsiang Co.	" "	20,000	"
Min Feng Co.	" "	20,000	"
Hua Hsing Co.	" "	30,000	Southern China
Han Li Co.	Chunglin printing machine	140,000	China
Chung Hua Co.	Wax paper, etc.	40,000	"
Chen Hua Fa Chi	" " "	50,000	"
Chin Yeh Co.	" " "	50,000	"
Hsin Feng Co.	" " "	50,000	"
Cho Hsin Co.	" " "	50,000	"
Li Chung Co.	Steel engraving	30,000	Shanghai
Li Wen Co.	Steel engraving and wax paper	30,000	China and South Seas
Hou Sheng Co.	Rubber-made stationery	50,000	China
Min Li Co.	Stationery	10,000	"
Eastern Chemical Co.	Color wash	——	"
Ma Kiang Co.	Blue-print paper	60,000	"
Yung Liang Co.	" " "	20,000	"
Min Sen Co.	Rulers	——	"
Chia Ting Co.	Envelopes	——	"
Hsing Yeh Co.	Paper and stationery	100,000	"
Hsing I Co.	Checkers and toys	10,000	"
China Checker Co.	" " "	30,000	"
China Ping-pong Co.	Ping-pong balls	——	Southern China
Great China Co.	Celluloid goods	800,000	China
Kuo Kuong Co.	" "	——	"
Shanghai Celluloid Co.	" "	——	"
Ta Chung Kuo Co.	" "	——	"
Ai Kuo Co.	Toys of all kinds	——	"

Factories	Articles produced	Value	Principal Market
Hsing Ya	Laboratory equipment	——	China
Hsieh Hsing	Sporting goods	——	„
Hua Kuo	Chemical glass	——	„ and South Seas
Chung Kuo	Scientific equipment	$ 50,000	Shanghai
Asia Model Factory	All kinds of models	10,000	„
Ching I	All kinds of samples	10.000	„
Ta Li	Tennis-balls	30,000	China and Japan
China Industrial Factory	Chinese typewriters	——	„
Hu Kai Min Ink Co.	Chinese inks	8,000	„
Pao Chuan Co.	Stationery	——	„
Min Shen Ink Co.	Ink and pastes	——	„ and South Seas
Ta Hua Industrial Co.	Stationery	——	„
Eastern Industrial Co.	„	26,000	„
Li Wen Co.	Ink and paste	——	„
Chung I Co.	Stationery	7,000	„
Tien Jan Co.	Ink and paste	100,000	„
Kang Sheng Ink Co.	Fountain pens and ink	50,000	„
Ma Li Co.	Stationery and paint	130,000	„
Chin Chen Co.	Paints and ink	20,000	„
Kuang Hua Co.	Stationery	20,000	„
Kuan Le Min Co.	Fountain pens	1,000,000	„
Ta Chung Hua	„ „	——	„
Hua Fu Co.	„ „	——	„
Sheng Ta Co.	Celluloid pens, etc.	——	„
Shanghai Co.	Pipe organs	40,000	„
Pei Ya Co.	„ „	20,000	„
Ta Hua Co.	„ „	20,000	„

Lu Chen Co.	" "	20,000	China and South Seas
Hua Hsing Hsiang Co.	" "	20,000	"
Min Feng Co.	" "	20,000	"
Hua Hsing Co.	" "	30,000	Southern China
Han Li Co.	Chunglin printing machine	140,000	China
Chung Hua Co.	Wax paper, etc.	40,000	"
Chen Hua Fa Chi	" " "	50,000	"
Chin Yeh Co.	" " "	50,000	"
Hsin Feng Co.	" " "	50,000	"
Cho Hsin Co.	" " "	50,000	"
Li Chung Co.	Steel engraving	30,000	Shanghai
Li Wen Co.	Steel engraving and wax paper	30,000	China and South Seas
Hou Sheng Co.	Rubber-made stationery	50,000	China
Min Li Co.	Stationery	10,000	"
Eastern Chemical Co.	Color wash	——	"
Ma Kiang Co.	Blue-print paper	60,000	"
Yung Liang Co.	" " "	20,000	"
Min Sen Co.	Rulers	——	"
Chia Ting Co.	Envelopes	——	"
Hsing Yeh Co.	Paper and stationery	100,000	"
Hsing I Co.	Checkers and toys	10,000	"
China Checker Co.	" " "	30,000	"
China Ping-pong Co.	Ping-pong balls	——	Southern China
Great China Co.	Celluloid goods	800,000	China
Kuo Kuong Co.	" "	——	"
Shanghai Celluloid Co.	" "	——	"
Ta Chung Kuo Co.	" "	——	"
Ai Kuo Co.	Toys of all kinds	——	"

CHAPTER XLII

GRAMOPHONES AND MOTION PICTURES

AMONG the more recent industries established in the Province, gramophones and motion-pictures are two of the more important lines. Both of these industries were started about the same time, and are making progress, but owing to keen foreign competition their development is very show. The following is a brief description of these two branches of modern industrial enterprise:—

GRAMOPHONES

It is over thirty years since these first appeared in Shanghai, "Victor" gramophones and records, imported by Mr. Hsu Chien Lin (徐乾麟) from the United States. This lead was followed by several other companies, and some foreign stores specialized in the business. This activity marked the beginning of the business in China.

In 1921 trade was so good that Chinese manufacturers, such as the Yung Yi Chang (永義昌) and Yu Feng (裕豐) Companies, started to import parts of talking machines, completing the finished article with Chinese material. These Chinese-made machines first appeared in the big department stores such as the Wing On and Sincere stores, and business was very good because the price was about 30 per cent lower than that of imported goods.

Following 1921 the Chen Hsin Co. (振新), Sin Sheng Co. (心昇), Yo Shen Hsiang Co. (悦勝祥), and Poh Ling Co. (百齡) started manufacturing talking machines, many new designs and models being made, and business was still developing until 1929, when there were over 30 establishments opened causing a problem in over-production, with brick business suddenly turned into depression. Prices were cut to cost or half the price of foreign machines, and many factories were forced to restrict production, while some had to close entirely. This state of affairs lasted throughout 1930, and the Shanghai "war" in

1932 started another period of depression, many factories being destroyed during the hostilities. Moreover, the radio business had been rapidly growing, and with gold prices going up imported materials and parts have increased considerably in cost.

WORKING CONDITIONS

At present there are only nine factories in Shanghai manufacturing talking-machines—the Yo Shen Hsiang Co. (悅昇祥), Yung I Chang Co. (永義昌), Tang Shun Hsing Co. (唐順興), Yu Feng Co. (裕豐), Teh Shen Co. (德勝), Hung Sheng Co. (鴻聲), Tai Hsing Co. (泰興), Chung Chai Chi Co. (鍾才記), and Chang Ming Co. (昌明). The latter, opened only recently, is the largest factory, having a capital of $20,000, the others being about $3,000 each. Most of these concerns are individually owned, and the workmen employed are carpenters, coppersmiths, and polishers, the last two being usually contracted for by local jobbers, only the carpenters being regularly employed, and given lodging and board. Wages are paid both by hour and by piece-work, skilled workers earning about $30 per month and unskilled about $10. Apprentices are sometimes paid less than a dollar per month.

RAW MATERIALS

The materials used, so far as Chinese factories are concerned, are wood, paint and lacquer, and metal fittings. The wood used for making cabinets is Oregon pine, imported from the United States and Canada at 10 cents per foot super. Teak and other wood are sometimes used. Lacquer, the wholesale price of which is $1.20 per pound, is also imported, particularly from Germany. Copper, iron, and steel are used to make the various parts, but many cannot be made by the Chinese, who still depend upon foreign supplies.

Sales of Chinese-made machines are made through wholesale house or music stores, which usually stock more than one brand. A factory sometimes makes machines to order in a special design, and the wholesale price ranges from $10 to $200 according to quality. There is no standard product, and the output fluctuates according to

demand. In the properous year of 1930 the Sien Sing Co. turned out 700 machines 9 month, the total value for that year being $100,000, while the Hsieh Ching Lung Co. (謝慶隆) had a total output worth $25,000. The Yu Feng Co. (裕豐), with capacity for producing 6,000 phonographs monthly, had an output valued at $82,500.

MANUFACTURE OF RECORDS

A French firm, the Pathe Co., was the first to establish a factory to make Chinese records, and the annual output reached 300,000, sold at $1.70 each. Subsequently the Pathe factory was bought by Chinese, and is still in operation.

Following the French pioneers in recording Chinese music were several German, Swiss, and American companies, while the Odeon Co. (高亭) was financed by Chinese and German capital. This concern was started in 1925 with headquarters at 58 Kiangsi Road, Shanghai, the technical staff being German. The business was subsequently entirely taken over by German stockholders, becoming a German concern.

The Shanghai Phonograph Company (上海留聲機器公司), with a capital of $50,000 invested by Japanese and Chinese, was established in 1921, and employed experts from the United States to manufacture records. The venture proved a failure owing to increasing expenditure and shortage of working capital, and was taken over by the China Phonograph Company, which was organized about the same time with a capital of $10,000. In 1924 the China Co. sent a staff of experts to Canton and recorded Dr. Sun Yat-san's address to the nation, and was thus given an excellent opportunity to extend its operations.

The China Co. increased its capital to $100,000 by selling stock to oversea Chinese, and then bought up the Shanghai Co. The organizer, Mr. Hsu Chi Kung (許冀公), was elected general manager, and Mr. Wang Yin Kang (王蔭康) assistant manager, this marking the beginning of all-Chinese owned-and-operated enterprise in this business. In 1928 the company had its incorporate name changed to the Great China Phonograph Co. (大中華公司), and its business is still developing.

CONDITIONS OF LABOR

The company is composed of three departments: recording, manufacturing, and sales. Wages range from $25 to $100 per month, with a bonus for output exceeding the quota. Generally, a skilled worker gets a bonus of about $15 per month, while unskilled laborers gets $1 or so. In addition to the bonus, the company pays $3 to each employee as "rice subsidy" (米貼). No work is done on legal holidays and Sundays, but a full-day and half-day wage respectively is paid. Working hours are fixed at nine per day, from 7 a.m. to noon and from 1 to 5 p.m.

RAW MATERIALS

The materials used for making records include shellac, carbon black, and clay. Shellac is imported from India at about $1.80 per pound, and carbon black is imported from the United States. The Great China Co. uses American clay as well as Chinese, the price of the imported article being about 30 cents a pound, while that from Chekiang Province costs 10 cents.

OUTPUT AND PRICES

The Great China Co. has several hundred Chinese musical records in its catalogue, all 10-inch, but divided into two brands, Red and Green Seal. The wholesale price of the Red is $1.20 each, and of the Green, $1.30, the retail prices being $1.40 and $1.50. The annual production ranges from 50,000 to 100,000 pieces, and business was very satisfactory in 1930. During and after the Shanghai "war" trade was seriously affected, but is now on its way to recorvery.

MOTION PICTURES

Kiangsu Province has been long recognized as the cultural center of China, and Shanghai as the center of all modern activities in the Province and so far as the cinema industry is concerned, may be regarded as representing not only the Province but the whole country.

Chinese films have a history of not over ten years. During this short period the industry could not be fully developed, first because of the very keen foreign competi-

tion, and secondly owing to internal troubles. To-day there are only three companies operating on a comparatively large scale in production—the Unique Film Co. (天一), the United China Co. (聯華), and the Star Motion Picture Co. (明星).

The cinema is regarded as a practical instrument for mass education. In the past it was considered simply as a form of entertainment, but it is now recognized as a necessity in communal life. The Chinese Government has paid great attention to the promotion of this industry, setting up bureaux for the inspection of the quality of the films made, and motion picture companies are also earnestly striving to improve the standard of their productions in order to meet the public demand for good films.

The cinema business was first started in China by foreigners. In 1909 an American organization, the Asia Motion Picture Co. was established and produced two pictures entitled "The Empress Dowager" (西太后) and "Unfortunate Child" (不幸兒). In 1913 another group of American technicians came to China and made two films, but they were not approved because they misrepresented Chinese life. The Chinese players merely took parts in the pictures, which were not really Chinese either in plot or production.

In 1918, however, the Commercial Press, Ltd., started to write scenerios for educational films, and three years later the New Asia Co. and the Shanghai Co. were established and produced pictures known as "Beauty and Skeleton" (紅粉骷髏) and the "Swear" (海誓) respectively. The Star Co. came into operation in 1923 and produced the "God's Punishment" (報應昭彰), a film which really marked the beginning of the Chinese motion picture industry.

During 1923 and 1924 a number of motion picture companies were established, including the Great China Co. (大中華), Great Wall Co. (長城), Lilium Co. (百合), Continental Co. (大陸), New China Co. (新中華), Unique Film Co. (天一), Shen Chow Co. (神州), Yu Lien Co. (友聯), New Youth Co. (新少年), Hsin Hua Co. (新華), Pacific Co. (太平洋), Hua Nan Co. (華南), United Co. (聯合), Ai Mei Co. (愛美), Mei Mei Co. (美美), Southern

Star Co. (南星), Golden Eagle Co. (金鷹), Eastern Co. (東方), Phoenix Co. (鳳凰) Morning Bell Co. (晨鐘), Great Asia Co. (大亞洲) Ta Ya Co. (大亞) Ta Chung Kuo Co. (大中國), etc. The Great China Co. and the Lilium Co. combined soon after they started, and put out a comparatively large production of films.

In 1926 the motion picture department of the Commercial Press was reorganized and became known as the Kuo Kuang Co. (國光) as an independent enterprise. About the same time the following new campanies were started: The Hsin Jen Co. (新人), Min Hsin Co. (民新), Hua Chu Co. (華劇), Peacock Co. (孔雀), Unique Film Co. (天一), Tung Fang No. 1 Co. (東方第一), Kung Ping Co. (公平), Hou Yu Co. (好友), Tien Nan Co. (天南), Wu Yu Co. (五友), Fifi Co. (非非), Three Star Co. (三星), Yang Yang Co. (洋洋), San Shan Co. (三山) at Chinkiang, and the Hua Tung No. 1 Co. (華東第一) at Wusih. Thus 1923-26 was a period of rapid growth and keen competition in the motion picture industry. Although Chinese pictures were in good demands when the films were first put on the market both at home and in Chinese settlements abroad, the keen competition created was a serious obstacle to the expansion of small companies. Business in general was not profitable, except for those companies which could turn out pictures that suited the public taste.

The Shanghai Municipal Council created a board of censors for inspecting intended to be shown in the International Settlement, pictures and a similar body was set up by the Ministry of Interior. All pictures must be approved by the censors before exhibition, and many of the small companies were affected by these restrictions and went out of business.

In 1929 talking pictures appeared in Chinese theatres, and immediately became popular, particularly in Shanghai. The first Chinese talking picture was not shown until 1931, although the "sound synchronisation" system was on trial since 1929. The Unique Film Co. started a movietone section and lad the industry in the making of talking pictures, followed by the Star Co. and later by several other companies. The Great China-Lilium Co., Min Shen Co.,

and the Shanghai Co. combined and formed the United China Company (聯華公司), while several new companies have been recently started.

There are at present about 35 motion picture companies in Shanghai and Kiangsu Province. Among them the three outstanding companies, the Tien I Co., United China Co. and the Star Co., each have an annual production of from 20 to 30 pictures.

The Unique Film Co. is a private enterprise owned by the Shou brothers. The company was started in 1925, and the main studio is located in Route Gaston Kahn (甘世東路) in the French Concession, Shanghai, the sound department being equipped with new apparatus imported from the United States.

The company has put out more than 80 silent pictures since starting business, and these films have been popular among theater-goers because both the stories and the players were well selected. The company has also a trade department, making pictures for other companies, such as "Mother visited by Fourth Son" (四郎探母) for Pathe Co., and the "Golden Dragon" (白金龍), a Cantonese talkie, for the Nan Fang Co. (南方), Among other activities of the Unique Film Co. is a broadcasting station jointly controlled with the China Radio Institute (中華無線電社).

The United China Co. is an incorporated organization of the five companies mentioned above. It has five studios, three in Shanghai, one in Peiping and another in Hongkong each studio having a director supervising all its affairs. The directing manager is Mr. Lo Min Yu (羅明佑), who controls directly or indirectly many theaters in the country. The company has specialized in producing pictures to suit the taste of young people.

The Star Co., also an incorporated concern, started in 1922, is the oldest company in the industry, and its founders, Mr. Chang Shi Chuan (張石川) and Mr. Tzen Chen Chiu (鄭正秋), are still taking part in the management. The main studio is located in the French Concession, Shanghai, and a sound department was installed in 1931 with American plant. This company is now making both talkies and silent pictures.

CHAPTER XLIII

PAPER

THE PAPER industry is one of the oldest in China, said to date back well over 2,000 years, but the modern paper-mill is comparatively new in this branch of Chinese industry. Of the pioneer concerns in Kiangsu adopting mechanical methods of paper-making the Tien Chang Paper Mill (天章造紙公司), Shanghai, is the oldest. It was started 42 years ago by the famous Viceroy Li Hung-chang; first under the name of the Lun Chang Paper Mill (倫章紙廠), later assuming the name of the Pao Yuan Paper Mill (資源紙廠), and reorganized in 1924 under its present name with a capital of $400,000. The company operates two plants—the eastern factory at Yangtsepoo Road, and the western at Luchiachui (陸家嘴) Pootung, Shanghai. The latter plant was closed down in 1927, having been partly destroyed by fire, and also placed in serious financial difficulties by a series of strikes. The next large mill to start operations was the Lung Chang Paper Manufacturing Co. (龍章紙廠), established in 1906 and located at Wai Jih Hwei Chiao (外日暉橋), a southern suburb of Shanghai. Among other establishments subsequently started in Kiangsu are the Ching Cheng Paper Mill (竟成紙廠), Shanghai (1922), Li Yung (利用), Wusih (1924), Kiangnan (江南), Shanghai (1925), Ming Sung (民生) Shanghai (1927), Paoshan, Shanghai (1928), Yuan Tai (源泰), Shanghai (1929), Hua Sheng Yih Chi 華盛益記), Wuhsien (1930), and Ta Hua (大華), Wuhsien (1931).

There are no less than 20 modern paper-mills now working in Kiangsu Province, all of which are Chinese owned. The Lung Chang, which is operated with a capital of Tls. 686,000, is the largest. The total number of Kiangsu workers employed in the industry is about 2,000, the most skilled operatives receiving from one to two dollars a day, while the average wage ranges from 40 to 70 cents.

The larger concerns, such as the Lung Chang, Ching Cheng, Kiangnan, Tien Chang, etc. are fairly well-equipped with modern paper-making machinery, including calendering machines, boilers, beaters, breakers, etc. The motive power is usually electric or steam, though in some mills Diesel engines are installed, and the aggregate horsepower of each mill varies from 35 to 2,500.

SUPPLY OF RAW MATERIALS

The raw materials used consist principally of wood pulp, rice-straw, and reeds. Pulp is imported from the United States, Scandinavia, Germany, Japan, Canada and Colombo, the average price per ton being about $360. Rice-straw, worth about 50 cents a picul, comes from Wuhsien, Sungkiang, Wuchin, Kashing (嘉興), and Huchow (湖州). The use of reeds in paper-making is an innovation introduced by the Kiangnan Paper Co. Reeds are found in marshy ground, particularly along the Yangtse River, and the fact that they can be obtained at much lower prices than rags and rice-straw reduces substantially the cost of production, placing this company at a great advantage in competition with the products of other paper-mills in China. In anticipation of further developments the directors in 1929 authorized the establishment of a reed-pulp mill at Chen Koo Chow (增課洲), in the vicinity of Kaotse station (高資), on the Nanking-Shanghai line. In

addition the company also arranged to purchase 4,000 mow of land for the cultivation of reeds.

Other important materials used in paper-making consist of old gunny-bags, rags, and waste-paper. The first are supplied from Hangchow (杭州), Haining (海寧), and Kashing, and in Shanghai, selling at about $2.50 a picul. Rags are of many varieties, and are collected at Tsungming, Haimen, Nantung, Tsingkiang, Kiangyin, Jukao, Taihsing, Chuansha, Fenghsien, Nanhui, Chinshan, Sungkiang, Paoshan, Kiating, Wuhsien, Wusih, Tanyang, and Wuchin, in Kiangsu, and at Hangchow, Wenchow (溫州), Ningpo (寧波), Shaohing (紹興) and Yuyao (餘姚) in Chekiang, and at Hankow in Hupeh. Rags are received at the mills in bales and are graded after careful sorting, prices ranging from $1 to $12 per bale. Waste paper is usually obtained from printers, cigarette factories, newspaper offices, etc., the value being determined by the quality of the paper, varying from two to nine dollars per picul.

In addition to the articles mentioned there are many other materials used in paper-making, including alum, sulphuric acid, soda ash, bleaching powder, white clay, lime, turpentine, etc. Alum comes from Wenchow and Pingyang (平陽), Chekiang, costing about $0.033 a pound; yellow turpentine, from Wenchow, about $0.077 a pound: white turpentine, from the United States, about 14 cents (silver) a pound; white clay, from Kiangyin, Wusih, Foochow and Taichow, Chekiang, about $0.015 a pound; and lime, from Changhing (長興) and Fuyang (富陽), Chekiang, and Ihsing, and Chuyung, Kiangsu, costing about 75 cents a picul. Japan was formerly the sole source of the Tien Yuan Electro-Chemical Works (天原電化廠) in

1929 the domestic variety has been gradually displacing the imported article. With regard to acids and soda ash, these are now abundantly suplied by such Chinese factories as the Pacific Alkali Co. (永利公司), Tientsin, and the Kai Chong Acid Co. (開成造酸公司), Shanghai, as well as the Tien Yuan, though until quite recently China depended almost entirely upon Japan and Great Britain to supply these chemicals. The prevailing price of soda ash is about $10 a picul, while that of sulphuric acid ranges from $17 to $21.

PRODUCTION AND MARKETING

The varieties of paper manufactured in Kiangsu include woodpulp paper, M. G. cap, uncalendered paper, cardboard, tin foil, wax paper, etc. The qualities produced in the Kiangnan Paper Mill are mainly those suitable for Chinese writing and drawing, while those from the Lung Chang and Tien Chang mills are modern printing papers.

Chinese paper in general does not enjoy an extensive market, and most of the product of mills in Kiangsu is consumed locally. Shanghai is China's educational center, and this being the city where the paper-mills are concentrated, naturally forms the best market for paper produced in the province. A fairly good demand comes from other large cities in Kiangsu and Chekiang, but orders from other Chinese provinces and the Straits Settlements are very small and infrequent.

Ninety per cent of the machine-made paper used in various parts of China comes from abroad, especially Japan, domestic output being limited.

The total value of paper imports from 1929 to 1931 is shown below:—

	1929 (Hk. Tls.)	1930 (Hk. Tls.)	1931 (Hk. Tls.)	Remarks
Paper, cardboard, pure bleached sulphite, uncoated	172,505	154,617	328,318	Mostly from Germany.
Paper, cigarette, on bobbins or rolls	3,051,477	3,089,978	5,496,554	Japan was the chief source of supply, followed by France, Italy and Great Britain in that order.
Paper, coated and/or enamelled on one or both sides	2,505,683	2,752,217	1,051,813	Mostly from Japan and Germany.
Paper, common printing, calendered or uncalendered, sized or unsized	8,633,941	9,034,945	9,960,432	The greater part comes from Japan.
Paper, glazed, either flint, friction, or plated, and marbled paper	615,091	406,573	1,192,795	Mainly from Italy and Austria.
Paper, M. G. Cap, made chiefly of mechanical wood pulp	3,600,173	4,035,068	7,802,130	Chiefly from Japan and Germany.
Paper, packing and wrapping	1,955,726	1,940,788	3,529,411	Mostly from Germany, Sweden and Japan.
Paper, printing	4,641,456	5,881,357	4,628,455	Imported chiefly from Japan.
Paper, strawboard, plain	248,295	195,103	82,947	Mostly from Japan.
Paper, unglazed tissue and M. G. bleached sulphite, free of mechanical wood pulp	103,845	176,169	338,343	Principally from Sweden.
Paper, writing, art printing, bank-note, parchment, pergamyn, and greaseproof	2,806,447	2,997,821	3,655,427	Mainly from Japan, with U.S.A. as second largest source of supply.
Other	5,911,076	6,719,639	7,338,011	
Wood pulp, mechanical	25,306	25,018	7,346	Imported mostly from Germany, Scandinavia, and Japan.

From the above figures it will be seen that paper is one of the principal items of China's import trade, and there is ample scope for Chinese mills to increase their present output by improving the quality of their products. The following table gives brief details of the 17 principal mills in Kiangsu Province:—

	Location	Organization	Capital	Principal Products
Lung Chang Paper Mill (龍章造紙廠)	Shanghai	Corporation	$400,000	Newsprint, *lien shih* (連史), *mao pien* (毛邊), wrapping paper
Ching Cheng Paper Mill (竟成造紙廠)	"	"	$400,000	Paperboard, wrapping paper, match-box paper
Kiangnan Paper Mill (江南造紙廠)	"	"	400,000	*Lien shih*, *mao pien*, *fang sung* (仿宋), *hai yueh* (海月), *chung kung* (重貢), *yu ko* (玉扣), blotting paper
Tien Chang Paper Mill (天章造紙廠)	"	"	$600,000	Book-covers, wrapping paper, newsprint, cardboard, match-box paper, name card
Ming Sung Paper Mill (民生造紙廠)	"	Partnership	10,000	Wrapping paper and newsprint
Pao Shan Paper (寶山造紙廠)	"	"	$100,000	*Lien shih*, *mao pien*
Yuen Tai Paper Mill (源泰造紙廠)	"	Sole Proprietorship	100,000	*Lien shih*, *mao pien* grey paper
Yuet Cheong Photo Card Mfg. Co. (粵昌卡紙廠)	"	Corporation	34,440	Photo mounts
Kung Hsing Photo Card Mfg. Co. (公興卡紙廠)	"	"	25,000	Photo mounts
Ho Feng Tin Foil Mfg. Co. (和豐錫紙廠)	"	Partnership	7,600	Tin foil
Kung Ping Tin Foil Mfg. Co. (公平錫紙廠)	"	"	10,000	Tin foil
Yung Liang Blue Drawing Paper Mfg. Co. (永亮晒紙廠)	"	Sole Proprietorship	6,000	Blue drawing-paper
Kuang Hua Wax Paper Mill (光華蠟紙廠)	"	"	600	Wax paper, M.G. Cap
V. I. Paper Mill (維一灰紙廠)	"	Partnership	20,000	Coarse grass paper
Lei Yung Paper Mill	Wusih	Corporation	15,950	*Lien shih*, *mao pien*, newsprint
Hua Sheng Yih Chi Cardboard Mfg. Co.	Wuhsien	Sole Proprietorship	60,000	Cardboard
Ta Hua Paper Mill (大華紙版廠)	"	"	250,000	Cardboard

CHAPTER XLIV

POTTERY

THE POTTERY industry of Kiangsu is centered at Ihsing, which has a reputation for earthenware similar to that held by Chingtehchen (景德鎮), Kiangsi Province, for porcelain. The city has been noted for its pottery from time immemorial, and the history of the industry dates as far back as the Tung Chow (東周) period, about 3,000 years ago when Fan Li (范蠡), minister to Prince Yueh (越王), retired from official life about 473 B.C. Kilns at Shushan (蜀山), a town east of Ihsing, were among the private enterprises initiated by this retired official, and the ruins of about 10 kilns in his gardens, Li Chang Yuan (蠡匠園), near Li Shu (蠡墅), are traceable to-day, while the names Li Chang Yuan and Li Shu are still used to designate the places where the kilns once existed. The industry gradually developed until toward the end of the Ming Dynasty (1368-1643) new kilns were in operation at Peito (白宕) and Tingshan (鼎山) in the neighborhood of Ihsing. Today the district bounded by Shushan on the east, Peito and Tangtu (湯渡) on the west, Peinichang (白泥場) on the south, and Chienlo (前洛) and Changan (常岸) on the north, covering an area of some 20 square *li*, abounds in pottery kilns.

The articles produced at Ihsing range from small ointment jars to huge *kongs* the height of a man and several feet in diameter. Between these two extremes are tubs used on farms and in villages for storing water, as flower-pots, for lotus flowers, rectangular vases, kitchen utensils, washing tubs, and earthenware seats, called "drum stools," for the garden. Rough earthenware tea-pots and cups, as used by country people, as well as those of finer quality, such as were presented to the emperors of old, are also made. In fact, so wide is the range of articles made that it is said every family in Kiangsu and adjoining provinces has one or more utensils in its possession made in Ihsing.

VARIETY OF PRODUCTS

Ihsing earthenware is brown or brick colored, and is usually glazed or enamelled, divided into six groups as follows:

(1) "Fine goods" or *hsi huo* (細貨).—These include two sub-divisions, higher and lower grade, but both being expensive varieties. The most common articles in this group are tea-pots, cups, jugs, saucers, plates, flower-pots, vases, and other decorations for the houses of the well-to-do.

(2) "Yellow goods" or *huang huo* (黃貨).—These highly vitrified articles are light yellow in color, and are so named to distinguish them from "fine goods," which are usually white. They include cooking skillets, cooking pans, oil bottles, and other household utensils, numbering over 40 kinds.

(3) "Huachi products" or *chi huo* (滸貨).—These include about three dozen varieties, the principal being wine jars and pitchers for preserving vegetables. They are all products of Huachi (畫溪), a village near Ihsing, hence the name.

(4) "Sandy goods" or *sha huo* (沙貨).—These are most extensively used and are very popular among the poorer people. They are products of Shushan, and the name is derived from the fact that the glaze has a sandy appearance. Ordinary kitchen and bedroom utensils are included in this category.

(5) "Dark color goods" or *hei huo* (黑貨).—These are similar to "sandy goods," but the glaze is coarser and darker, and are products of Tingshan.

(6) "Coarse goods" or *tsu huo* (粗貨).—These are sub-divided into three groups, namely, large *kongs*, tall *kongs*, and fancy *kongs*.

According to recent investigation, there are 63 kilns operating at Ihsing, of which 21 are devoted to making *kongs*, 10 to "dark" and "sandy goods," 10 to "fine goods,"

8 to "Huachi products," and 5 to "yellow goods." The number of kilns turning out different kinds of Ihsing pottery in various parts of the district is as follows:—

	Hsi huo	Sha huo	Hei huo	Huang huo	Tzu huo	Chi huo	Total
Shushan	6	8	—	—	—	—	14
Tingshan	—	—	4	—	3	—	7
Lishu	—	—	1	4	4	—	9
Pienchuang	—	—	3	—	2	—	5
Changan	1	—	—	—	—	—	1
Peinichang	—	—	—	1	—	—	1
Tangtu	—	—	—	—	—	8	8
Peito	—	—	—	—	12	—	12
Chienlo	3	—	—	—	—	—	3
Hsiashu	—	3	—	—	—	—	3
Total	10	11	8	5	21	8	63

KILNS

The kilns are long tunnels about 20 feet in width, and from 60 to 100 feet or more in length. They are built with earth bricks, coated outside with clay, on the slope of a hill, generally at an incline of from 15 to 20 degrees. In addition to the fireplace at ground level where fuel is used as in an ordinary furnace, there are three or four openings for depositing and removing pottery. Each kiln is further divided into from 25 to 48 horizontal sections, with two openings on the opposite sides of each section for inserting firewood. About 2,000 catties of wood are used for one baking, the amount depending on the length of the kiln and the kind of ware to be baked. Articles which require stronger heat are placed near the upper end of the kiln in order to get a higher temperature. The cost of building a large kiln is about $600, while a small one costs about $300.

CLAY

Clay is obtained in the vicinity of Ihsing and is cut to a depth sometimes of several hundred feet. There are a number of different varieties available, which together with their location, color, manner of application, and price are shown as follows:

	Location	Color after Baking	Application	Catties for one Dollar
Pei-ni (白泥), or white clay	Peinichang	White	Singly	450
Huang-ni (黃泥), or yellow clay	Huangnichang (黃泥場)	Yellowish brown	,,	700
Sheng pei-tu (生白土), or white earth, unburned,	Chaotuyn(朝渡圩)	Grayish white	In mixture	2,000
Shu-pei-tu (熟白土), or white earth, burned	Various localities	Light brown	Singly or in mixture	3,000
Ke-ni (磕泥),	Nanshan (南山) & Tsingliungshan (青龍山)	Dark brown by mixing with *nun-ni*	In mixture	1,000
Nun-ni (嫩泥), or tenuer clay	Heishan (西山), Chientungshan (前東山) & Wayao (瓦窯)	Purple by mixing with *tze-sha*	,,	500
Tse-sha (紫沙), or "purple sand"	Nanshan & Hwanglungshan (黃龍山)	Purple	,,	500
Chia-tu (假土)	Wayao, Ningchu (寧造) & Huangnichang	Grayish white	,,	3,000

Analysis gives the following details of chemical content:

	Silicon Dioxide (SiO_2)	Aluminum Oxide (Al_2O_3)	Ferric Oxide (Fe_2O_3)	Titanium Oxide (TiO_2)	Manganese Oxide (MnO)	Calcium Oxide (CaO)	Magnesium Oxide (MgO)	Potassium or Sodium Oxide (K_2O or Na_2O)	Loss from Calcination	Total
Pei-ni	65.15	22.48	2.00	1.06	0.01	0.70	0.78	0.87	6.42	99.47
Huang-ni	70.55	17.75	3.09	1.11	0.02	1.03	0.65	1.13	5.43	100.75
Nun-ni	31.57	14.77	40.07	0.52	0.02	0.90	1.29	2.19	8.77	100.10
Chia-tu	72.77	14.66	3.96	1.05	0.01	0.62	0.61	1.35	4.97	100.00
Ke-ni	67.07	16.35	7.57	1.12	0.01	0.45	0.53	1.55	5.06	99.71

In addition to the above-mentioned quarried clays, mixtures are also used, particulars of which are given below:—

	Location	Color After Baking	Application	Catties for one Dollar
Tsing-ni (青泥), or blue clay	Huanglung-shan	Blue	Singly	100
Tze-ni (紫泥), or purple clay	Nanshan & Huanglung-shan	Purple	,,	100 (1st grade) 240 (2nd ,,) 400 (3rd ,,)
Tan-ni (潭泥)	,,	Ash gray	,,	80
Hung-ni (紅泥), or red clay	,,	Red	Singly or with other mixtures	20
Lu-ni (綠泥), or green clay	Nanshan & Huanglung-shan	Jade-green	,,	80

These clays are all mixtures of the quarried clays. For instance, the purple clay and *tan-ni* are mixtures of the *hei liao* (黑 料), or "black glaze stuff" from Kiangsi Province, and blue clay in different proportions. The red clay is manufactured from "purple sand."

The clays are of different degrees of hardness; generally, the blue and red varieties are harder and more tenacious, while the white and yellow are softer and more brittle. To prevent cracks or crumbling, a judicious blending of different varieties is necessary in manufacture. The adjustment of proportions varies with the quality of the goods, as shown below:

For "sandy goods:" (a) Finer grade—three parts of *nun-ni*, seven parts of *chia-tu*. (b) Coarser grade—four parts of *nun-ni*, six parts of *ko-ni*. For "dark color goods": Equal parts of *nun-ni* and *ko-ni*. For Huachi products: (a) Four parts of *nun-ni* and six parts of *ko-ni*, (b) white clay, (c) yellow clay. For "fine goods": Blue clay, red clay, green clay, *tan-ni* or purple clay is used according to the color required.

GLAZES

Glazes are prepared from metals, minerals, clays, and other materials. Copper, lead, and tin are the most common metals used, "dripstone" (滴水石), mica, and "white stone" (白石) are the most common minerals, and white clay, *tu ko* (土骨), *yiao han* (窰汗), and *ni chang* (泥漿) or clay paste are the clays most used. The metals are refined, the minerals powdered, and the clays filtered, before being finely ground in a stone mortar and mixed with glass, "stone yellow" (石黃), "stone blue" (石藍), or "black glaze stuff" in the required proportions. The following are a dozen common glazes and their constituents:

White glaze	Lead powder, *yiao han*, glass, and *ni chang*.
"Colorless" glaze	Unburned white clay, and *nun ni chang* (嫩泥).
Lavender glaze	Copper dust, lead powder, *yiao han*, *ni chang*, and glass.
Purple-blue glaze	Lead ash, *tu ko*, white stone, and *ni chang*.
Blue glaze	Copper dust, white stone, stone blue, *ni chang*, and glass.
Deep blue glaze	Mica, *yiao han*, stone blue, and glass.
Purple glaze	*Tu ko*, white stone, and *ni chang*.
Green glaze	Copper dust, lead ash, white stone, *yiao han*, *ni chang*, and glass.
Dark green glaze	Copper dust, lead ash, *yiao han*, black glaze stuff, and glass.
Yellow glaze	Tin powder, *tu ko*, *ni chang*, and other mineral matter.
Yellow glaze (another shade)	*Tu ko*, *ni chang*, black glaze stuff, and glass.
Orange red glaze	Lead powder, "dripstone," stone yellow, and glass.

White clay, *tu ko*, *yiao han* or "perspiration drops," collected from lime-kilns in the vicinity of Tingshan in the form of pellets of various sizes and crushed into a white powder, *ni chang*, etc., are all of local production, particulars being shown below:

	Original Color	Color after Baking	Silicon Dioxide	Aluminium Oxide	Ferric Oxide	Manganese Oxide	Calcium Oxide	Magnesium Oxide	Potassium or Sodium Oxide	Loss from Calcination	Total
White clay	Light yellow	Light red	77.18	9.66	4.60	0.30	1.01	0.53	3.10	4.01	100.39
Tu ko, inside surface	Light grey	Dark red	19.58	3.98	50.10	2.44	(Traces)	(Traces)	—	24.19	100.25
Tu ko, outside surface	Dark yellow	Dark red	30.40	1.83	52.50	4.07	(Traces)	—	—	11.15	99.96
Yiao han	White and black	—	73.63	1.91	2.31	0.68	4.70	3.20	12.24	0.49	99.16
Ni chang	Dark green	Green	41.59	13.61	4.30	—	13.93	0.73	1.76	24.61	100.53

	Original Color	Color after Baking	Silicon Oxide	Aluminium Oxide	Ferric Oxide	Manganese Oxide	Zinc Oxide	Lead Oxide	Copper Oxide	Cobalt Oxide	Arsenic Oxide	Calcium Oxide	Magnesium Oxide	Sodium or Potassium Oxide	Loss from Calcination	Total
White glaze	Gray	Yellow	50.15	10.89	1.43	5.30	13.93	—	—	—	—	4.11	2.06	5.61	5.70	99.27
Green glaze	Dark grey	—	45.06	9.62	5.23	0.90	18.98	0.59	0.60	—	—	2.50	—	4.24	12.81	109.53
Red glaze	Light yellow	Red	44.31	8.73	8.58	0.58	—	—	—	—	—	16.21	0.99	2.60	17.94	99.94
Hua Kang Yu (花缸釉)	Grey	—	42.60	10.33	4.00	5.58	3.77	—	0.43	—	—	12.18	1.33	3.34	14.92	98.48
Chun yu (均釉)	Grey	—	47.72	9.66	3.14	6.02	—	6.12	1.08	—	—	5.65	1.61	4.40	15.58	100.98
Blue glaze	Dark blue	—	36.10	2.42	1.58	—	—	42.54	—	5.16	3.36	3.14	0.55	4.87	—	99.72

MANUFACTURING PROCESS

The first step in pottery making is the moulding of shapes. The villages in the vicinity of the kilns, bounded by Hupin (湖濱) on the east, Tungkuanshan (銅官山) on the west, Nanshan (南山) on the south, and Chinchi (荊溪) on the north, covering an area of over 30 square *li*, form the center of moulding industry, and about 60 per cent of the population are engaged in this work, two-thirds of them being women, turning out principally "yellow goods", "sandy goods", and "dark color goods", while the men make "fine goods" and *kongs*.

Three methods of moulding pottery are employed: (1) For large size utensils, including *kongs*, pitchers, jars, and the like, the *pa tso* (把作) method is used. A basin is placed on a board fixed on a stone stand firmly set on the ground. The bottom of a *kong* or a similar article is roughly made into the shape of the basin by working the clay round the basin with both hands. The body is gradually built up from the bottom by the gradual addition of more clay, and the rough hollow is then filled with a stone bowl of corresponding size and the whole beaten with wooden sticks on the outer surface until the body is perfectly formed. (2) For medium or small size articles, including common kitchen and household utensils, the *pien tso* (片作) method is used, similar to the *pa tso* method, but more elaborate, the body being worked up, part at a time, by using tile moulds. (3) For articles of fine design the *hsi tso* (細作) method is used. Fine clay, generally the white and yellow variety, is used for these articles, and is worked into shape on a potter's wheel, the article thus produced being finished off with the aid of a polishing cloth and polishing horns.

The clays used are prepared in the form of fine powder or bricks, made by drying the clay in the sun, then saturating the dry mass with water to form a putty, which is again dried in the sun and then powdered down, when it is ready for making pottery. It is coarse-grained when compared with the prepared clay in bricks, hence is

called "coarse clay", or *tsu-ni* (粗泥). These bricks are prepared in the following manner: The clay is dried in the sun, powdered down, sieved to get rid of rock particles, and is then immersed in water which is constantly stirred. The resultant putty, after the excess water has been removed, is cut into bricks and sold to pottery body makers.

The moulded shapes when made are dried in the sun for a day or two before being conveyed to the kiln. Small articles are put inside large articles in order to save space and the latter are covered and sealed. When the kiln is fully loaded, the openings near the fire-place and on each section are closed and sealed with earth to prevent the ingress of air. The fire is started by burning cedrela wood, and when properly burning the fire-place is closed, and the openings in the second section of the kiln are opened and pinewood put in and burned. As soon as the second is heated the openings there are likewise closed up, and the openings in the third section are opened and another fire started. Similar processes are repeated with other section until every part of the kiln has been heated, after which it is allowed to cool down, and the contents are ready for removal. The length of time required for charging, baking, cooling and opening vary with different kilns and with different qualities of goods, as shown in the following table:

	Hours for Charging	Hours for Baking	Hours for Cooling	Hours before Opening
For "yellow goods"	24	24	12	24
For Huachi products	6	15	15	3
For Huachi products (large kiln)	10	52	40	6
For "coarse goods" (small kiln)	8	26	30	4
For "sandy goods"	3	20	24	5
For "dark color goods"	5	20	14	4

In firing the kilns four kinds of fuel are used, cedrela wood, pine wood, reeds, and coal, the first three being produced in Nanshan (南山) and Hsishan (西山) in the neighborhood. Pine and cedrela wood cost $40 per 100 piculs, and reeds, $25 per 100 piculs. The average amount of fuel consumed in kilns is shown below:—

"Fine" pottery:	Cedrela, 10 piculs; pine, 5 piculs; reeds, 300 piculs.
"Sandy" pottery:	Cedrela, 5 piculs; pine, 45 piculs; reeds, 15 piculs.
Huachi pottery:	Cedrela, 20 piculs; pine, 70 piculs; reeds, 1 picul.
A "Dark color" pottery:	Cedrela, 20 piculs; pine, 70 piculs reeds, 8 piculs.
"Coarse" pottery:	Pine, 140 piculs for a large kiln, and 70 piculs for a small kiln; coal, two tons for a large kiln, and half a ton for a small kiln.

Before baking the articles are glazed, and medium size or small pottery being immersed them in the glazing material in a vessel up to the rim, and then dried in the sun. For large articles, like *kongs*, the glaze is applied by painting. Yellow clay and coarse clay bodies are glazed while wet in order to prevent cracks, while white clay and fine clay bodies are glazed after being completely dried.

OUTPUT

The output of the Ihsing kilns varies with the number of bakings, but an idea of the output is shown as follows:

	Number of Bakings a year in each kiln	Value of output from each Baking
"Coarse" goods	40–70 for large kilns	$300–$350
	100–150 for small kilns	200–250
"Dark color" goods	100–130	170–190
"Yellow" goods	50	340
"Fine" goods	10–25	600–1,000
"Sandy" goods	80–100	90
Huachi products	80–90	100–130

There is no accurate figure available to indicate the value of the output of the Ihsing kilns, but according to recent investigation, the annual production of "coarse goods" is estimated at from $500,000 to $600,000, "yellow goods" and Huachi products each $100,000, "sandy goods" and "dark color goods" each $50,000 or $60,000, and "fine goods" only $500, making a grand total of about $1,000,000 per annum.

WORKERS AND WAGES

Over 10,000 persons earn their living in the pottery business at Ihsing, divided into clay diggers, mixers, moulders, and burners. Most of the potters are emigrants from districts north of the Yangtse River, where the meagre yield of the land cannot support the whole population, part of which migrates to the more prosperous districts south of the river to seek employment. The average daily wage of a Ihsing potter is 20 cents with board. The highest paid workers are the makers of "fine goods" and designers, receiving from $200 to $300 a year; while the lowest paid are the burners, getting from $30 to $40 a year. Working hours are very long, especially in the case of burners, who are required to work and watch the kilns day and night when baking is in progress.

MARKETING

Ihsing pottery is sold throughout the country, the "green clay" and fancy glazed goods are most widely used. In addition to supplying neighboring cities such as Wuchin, Wusih, Nanking and Shanghai, pottery is shipped to Tatung (大通) and Wuhu (蕪湖) in Anhui Province; Tsingtao, Tsinan (濟南), and Chefoo in Shantung Province; Peiping and Tientsin in Hopei Province; Newchwang in Liaoning Province; and even to the Straits Settlements, Japan, and the United States. The "yellow goods" find their best market in the neighboring provinces, "coarse goods" in Chekiang, Anhui, Japan and Straits Settlements, "sandy goods" in neighboring cities, "black goods" in Chekiang and Shanghai, and the Huachi products in Changshu of the same Province and Kashan (嘉善) of Chekiang Province. Boats are generally employed in carrying pottery, and large articles, such as *kongs*, are loaded without packing, but tea pots, flower vases, etc., are packed in baskets lined with straw.

Except for "fine goods", which may be purchased direct from kiln owners, the Ihsing pottery business is handled through brokers, who are divided into *yin hong* (印行), mainly for first grade goods, and *hao hong* (號行), mainly for second grade goods. The former charge 6 per cent commission, and the latter 7 per cent, sales being made against cash or one month's credit.

POTTERY WORKS AT CHUYUNG

Chuyung, near Nanking, is also noted for its pottery works, and the *kong* is a special product of this district. Clay is obtained from a deposit about 20 feet below the surface, and the kilns, 11 in number, mostly in the country districts between Hsiashu (下蜀) and Kaotze (高資), stations on the Nanking-Shanghai Railway. Each kiln is capable of turning out over 100 *kong* of different sizes every day.

Chuyung pottery manufacturers employ two classes of operatives, one to make the moulds and the other to attend to the kilns. The former are paid on a piece-work basis, receiving from 20 to 30 coppers for each mould, according to size. Burners and others who attend the kilns receive a monthly wage of about $10.

Chuyung products for export are mostly loaded at Siashu station, but as most of the kilns are situated miles away from the railway, manufacturers have to employ wheelbarrows and junks to get their goods to the station. *kong* are put on wheelbarrows and carried to Shih Chieh Tou (市街頭), where they are loaded on junks, which carry them either to Hsiashu station for loading on rail or to other cities for sale.

CHAPTER XLV
ENAMELWARE

IN 1914-1915 enamelware was imported into China annually to the value of over Hk. Tls. 3,000,000 of which Japan contributed 80 per cent, but in 1916 an American concern established in Shanghai the Kuang Ta factory (廣大工廠) at Kuchiawan (顧家灣), Chapei, to make enamelware, particularly cups and food containers. Not long after this company came under Chinese control and became known as the Chu Feng Enamelware Company (鑄豐搪瓷公司), with an American expert as chief adviser, its principal products being wash basins, rice-bowls, and kerosene-stoves. In the spring of 1924 this company was reorganized and has since been known as the Chu Feng Tung Chi Enamelware Company (鑄豐通記公司). The business handled by this company during 1931 amounted to over $1,112,000, but the following year its turnover decreased considerably owing to the Sino-Japanese hostilities in Shanghai.

Prior to the reorganization of the Kuang Ta concern there was in Shanghai an enamelware company under the name of Kuang Ta (廣遂), but shortly after its formation it became known as the I Feng Enamelware Factory (益豐搪瓷廠). There were also the Ting Feng Enamelware Factory (鼎豐搪瓷廠) and the Kung Shang Company (工商公司), the latter a Japanese concern, and both of them short-lived. In order to encourage the making enamelware the China Vocational School (中華職業學校) at Lu Chia Pang (陸家浜), started a course of technical instruction, and a laboratory fitted with a furnance and other necessary equipment was opened, but owing to lack of experience the scheme failed, and the plant passed under control of the Chung Hua Enamelware Factory (中華琺瑯廠). Other factories operating at that time were the Heng Feng (恆豐), Hua Sheng (華盛), Cheng Hua (振華), Yung Ho (永和), and Ta Feng (大豐), but none lasted very long.

During the last few years factories which have made good progress include the Chao Feng (兆豐琺瑯廠), Hua Feng (華豐搪瓷廠) and Lien Ying (聯營瓷牌工廠) in the lead, with the Hsieh Feng (協豐搪瓷廠), Wei Wei (微微琺瑯廠) and Chiu Sin (求新搪瓷廠), each handling a turnover of about $30,000 per annum. Other factories established more recently are the Shanghai Enamelware Factory (上海搪瓷廠), Chiu Sin (久新), Hang Feng (恆豐), Ta Lu (大陸) and Jih Sin Ho Chi (日新和記), the first two being the most important. The Chiu Sin factory has been divided into two separate concerns—the Chung Nan (中南實業琺瑯廠) and Yung Feng (鎔豐搪瓷廠) factories.

SHANGHAI FACTORIES

There are fifteen enamelware factories operating in Shanghai, with a total capital of over $1,170,000, the number of furnances installed being 74. The most important concerns are the Hua Feng (華豐), I Feng (益豐), Chung Hua (中華), Chu Feng (鎒豐), Chao Feng (兆豐), Chung Nan (久新) and Shanghai (上海). The following table gives further details of these concerns operating in Shanghai, with their addresses, equipment, operatives, and capital:

	Capital.	Operatives.	Furnaces.	Annual Output.	Location.
Hua Feng (華豐)	$300,000	210	18	$2,450,000	Chow Chia Tu, Pootung (浦東周家渡)
I Feng (益豐)	300,000	160	16	2,184,000	Chu Men Road (局門路)
Chu Feng (鎒豐)	250,000	140	8	1,260,000	Heng Yieh Road (閘北恆業路)
Chao Feng (兆豐)	20,000	36	4	546,000	Pan Sung Yuan Road (半淞園路)
Lien Ying (聯營)	20,000	20	2	266,000	Heng Yieh Road, Chapei

Chung Hua (中華)	60,000	198	12	1,540,000	Ning Hsun Road Nantao (南市迎勳路)
Chiu Sin (久新)	100,000	80		——	Chi Tsao Chu Road (製造局路)
Shanghai (上海)	50,000	90	3	——	Hsieh Hsu Road (斜徐路)
Hsieh Feng (協豐)	20,000	20	1	126,000	Kuo Ho Road (國貨路)
Wei Wei (微微)	20,000	20	1	126,000	Kuo Ho Road
Yung Feng (鎔豐)	10,000	30	1	——	Kuo Ho Road
Chung Nan (中南)	50,000	30	1	——	Hsieh Hsu Branch Road (斜徐支路)
Heng Feng (恆豐)	5,000	25	1	——	Heng Yieh Road
Ta Lu (大陸)	5,000	24	1	——	Heng Yieh Road
Jih Sin Ho Chi (日新和記)	3,000	20	1	——	Shan Yang Road (三陽路)

Supplies for making enamelware came originally from Japan, and in order to develop the industry in China a number of Japanese, led by Mr. C. Wada (和田千太郎), organized the Wada Enamel Factory (和田琺粉藥廠) at Heng Feng Road, Chapei (閘北恆豐路). Subsequently a Chinese named Lo (羅), after resigning from this Japanese company, opened his own establishment, called the Ta Chun Factory (大鈞琺粉廠) and not long afterwards the Wada factory came under control of the Chu Feng concern, while the Ta Chun was taken over by the I Feng Company.

Although Chinese manufacturers today have learned details of the processes of the industry, and no longer need foreign technical advisers, the materials required have to be imported, and are largely bought from Japan. These include glass powder, borax, antimony, quartz, soda, saltpetre, manganese oxide, copper sulphate, clay, cobalt oxide, nickel

oxide, antimony oxide, tin sulphate, manganese carbonate, alum, chromium oxide, calcium carbonate, potassium carbonate, boric acid, sulphur, and felspar. Suitable clay and felspar are also found in China, the latter at Tai Shan (泰山), Laiwu (萊蕪), Shantung Province, Chuki (諸暨), Chekiang Province and Nan Hai Ping (南海濱), near Dairen, while clay deposits are found at Fouliang (浮梁) and Pinsiang (萍鄉), Kiangsi Province, Liling (醴陵), Huhan Province, Kimen (祁門), Anhui Province, and Ihsing in Kiangsu Province. Imports of clay and felspar from Japan have been decreasing lately, giving place to domestic supplies. Saltpetre is found in Tungshan, but owing to its high price manufacturers use imported supplies, which are very much cheaper.

METHOD OF MANUFACTURE

The proces sof manufacturing is divided into shaping, cleaning, enamelling, and finishing. Iron sheets—mostly imported from the United States—are first cut into squares and then into rounds to the desired size and pressed into the required shapes, such as rice-bowls, teacups, etc.Handles, legs, etc. are welded by electricity.

The shaped articles are heated in a furnace to remove any oil or other foreign matter from the surface, and dipped into sulphuric acid to remove any rust, after which they are ready to be enamelled. After being coated with a thin layer of enamel paste the shape is again put in the furnace, after which last process is applied of applying transfers of pictures or lettering to the wares before they are ready for market.

PRODUCTS AND TRADEMARKS

Enamelware made in local factories includes basins, trays, pans, bowls and cups, buckets, portable food containers, and miscellaneous household utensils. The following is a list of the factories operating in Shanghai with their trademarks and main products:—

Trademark.		Products.
Hua Feng (華豐搪瓷廠)	Ju I (如意)	Utensils, medical
I Feng (益豐搪瓷廠)	"Gold Money" or Chin Chien (金錢)	" apparatus
Chu Feng (鉅豐搪瓷廠)	San Sheng (三牲)	" signs
Chao Feng (兆豐搪瓷廠)	Hung Fu (洪福)	" "
Chung Hua (中華琺瑯廠)	"Standing Crane" or Li Ngoh (立鶴)	" "
Shanghai (上海搪瓷廠)	Tai Chi T'u (太極圖)	" "
Chiu Sin (久新搪瓷廠)	"Nine Stars" or Chiu Sing (九星)	" "
Lien Ying (聯德瓷牌工廠)	Wu Ti (無敵)	Signs, miscellaneous
Hsieh Feng (協豐搪瓷廠)	Hsieh Feng (協豐)	" "
Wei Wei (微微琺瑯廠)	"Butterfly"	" "
(The following concerns are in process of flotation).		
Chung Nan (中南實業琺瑯廠)	"Bees"	" "
Yung Feng (鎔豐搪瓷廠)	——	" "
Ta Lu (大陸搪瓷廠)	——	" "
Heng Feng (恆豐搪瓷廠)	"Golden Bell" or Chin Chung (金鐘)	" "

Since 1915 Chinese enamelware factories have increased rapidly in number. At first, a market was found in the Yangtse Valley, and gradually the field of business has been extended to the northeast and to the Philippines. The turnover of the National Enamelware Combined Sales Office (which includes the Hua Feng, I Feng, Chu Feng, and Chao Feng Companies (國產搪瓷營業所) was about $3,200,000, while the total amount of business done by enamel factories in Shanghai during 1931 was estimated at about $6,000,000, 70 per cent of which was sold to local merchants, and the balance distributed outside Shanghai,

with more than $700,000 worth going to Hankow and Tientsin, about $200,000 to the Philippines, about $600,000 to Canton, Changsha, Wuhu, Chinkiang, and Kiukiang, and about $14,000 each to Dairen, Newchwang, Chefoo, Wanhsien, Ichang, and Wenchow. With the exception of the North, where Japanese influence is still strong, all other parts of China are almost wholly supplied with enamelware of domestic manufacture.

FOREIGN COMPETITION

The World War created an excellent opportunity for the development of the Chinese enamel industry, and the temporary absence of foreign competition encouraged the establishment of new factories. Prior to 1920 China spent annually more than $3,000,000 on imported washbasins, bowls, cups, food containers, etc. from such countries as Great Britain, Germany, the United States, Italy and Japan. Since that year, however, domestic products of improved quality have been able to meet an increasing demand, especially from the inner provinces, where foreign articles soon disappeared from the market. Customs reports show that while there was still an aggregate import of about 800,000 Haikuan taels worth of enamelware of a diameter over 36 centimeters, the total import of smaller articles amounted in 1931 only to 260,000 Haikuan taels, representing a decrease of almost 75 per cent, compared with the 1928 figure. The table appended shows the trend of the import trade from 1928 to 1931 ("A" denoting articles less than 36 centimeters in diameter and "B" those over that size):—

From	Class of Goods.	1928. (Hk. Tls.)	1929. (Hk. Tls.)	1930. (Hk. Tls.)	1931. (Hk. Tls.)
Japan	A	956,487	659,256	381,647	140,126
	B	252,391	233,203	208,024	154,020
Hongkong	A	204,305	177,352	184,694	81,478
	B	46,225	76,940	87,735	90,152
Italy	A	42,826	79,891	4,209	4,536
	B	53,570	70,861	9,442	61,393
Korea	A	25,404	9,067	7,127	844
	B	18,747	7,499	10,903	2,691

Germany	A	15,495	33,042	5,972	11,303
	B	107,177	145,145	143,575	297,481
Russia	A	8,501	3,021	3,021	2,040
	B	71,470	60,450	12,549	28,849
Great Britain	A	387	3,090	633	2,117
	B	4,862	14,711	28,009	30,874
Austria	A	——	3,043	1,271	16
	B	1,828	10,519	7,692	31,906
Sweden	A	1,296	8,293	9,465	9,327
	B	2,847	8,331	14,750	26,315
Other	A	12,529	4,034	13,650	5,353
Countries	B	61,747	94,104	197,182	99,071
Total	A	1,267,230	980,089	611,692	257,140
	B	620,864	721,763	719,866	822,752

BUSINESS CUSTOMS

Iron sheets, acids, saltpetre, cobalt oxide, nickel oxide, borax, and other materials not available in China are bought from local foreign importers for cash or 10-day native bank orders. A joint sales office, consisting of two departments, retail and wholesale, is maintained by Hua Feng (華豐), I Feng (益豐), Chu Feng (鉅豐) and Chao Feng (兆豐) to facilitate the handling of their output. Other concerns have their business departments either adjoining the factories or in the trading section of the wholesale transactions, an additional 0.5 per cent being allowed on goods for sale where foreign competition has to be met.

CHAPTER XLVI

GLASSWARE

THE GLASSWARE industry in China was started in 1903 when Messrs. C. C. Chang (張季直), C. S. Hsu (許九香) and S. T. Tuan (段少滄) established the Yao Hsu Mechanical Glass Company, Ltd. (耀徐玻璃廠) with a capital of 830,00 taels. Unfortunately this company was shortlived and owing to poor management its operations were suspended since 1910. In Shanghai, glass-making has a history of about 20 years, the oldest Chinese establishment being the Jen Ho Glass Works (仁和玻璃廠), started in 1912. In the same year a Japanese concern called Chung Hua Glass Works (中華玻璃廠) was also established but later became a Chinese enterprise in 1915 under the name of Chung Hua Feng Chi Glass Works (中華鳳記玻璃廠). Since the European War many additional plants have been built, the largest of which are the Kung Yi Glass Factory (公益玻璃廠) established in 1920, the Shanghai Glass Manufacturing Company Ltd. (上海玻璃公司), and the Pootung No. I Glass Factory (浦東第一玻璃廠) started in 1921, the Hsieh Chang Glass Factory (協昌玻璃廠) opened in 1922, Kuang Ming Glass Manufacturing Company (光明製造廠) and the Tung Ho Glass Factory (同和玻璃廠) in 1925, and the Kuang Hsing Glass Works (廣興玻璃廠), Tai Hsing Glass Works (泰興玻璃廠)

and the Chien I Glass Works (謙益玻璃廠) started in 1926. In 1927 the number of glass factories in China totalled over 40, of which the biggest were Han Chang (漢錩), Tsu Chen (志成), and Tze Kang (滋康) in Shanghai, and Hsing Hua (興華) in Tungshan. In 1929 owing to high price of gold and resultant increase in price of raw material many glass works in China were suspended. However, new factories also came into existence by this time and in 1930 and 1931 additional glass works such as Hua Feng (華豐), Tung Chi (同記), Hsieh Hsing (協新), Hua Hsing (華新), and Liang I (兩宜) were subsequently established. During the Sino-Japanese hostilities at Shanghai glass factories devastated by warlike activities were Jen Ho, Chung Hua Feng Chi, Shanghai and Kuang Ming. After the conclusion of the hostilities additional glass factories were started with Hua Kuo (華國), Yao Yeh (窯業), Chung Han (中漢), Tsing Ming (晶明), Tsing Hsing (晶鑫), Tsing Hua (晶華) and Teh Hsing (德興) leading in importance, followed by Hung Fu (鴻福), Tien Chen (天成), Hsieh Lung (協隆), Chung Hsing (中興), and San Sing (三星)

PRESENT CONDITIONS

There are over 40 glass factories operating throughout the Province. With the exception of two or three which are found in Tungshan and Wuhsien the remainder centers at Shanghai. The following are comparatively larger glass factories operating in Shanghai with their capital, workers annual output and other particulars:

	apital	Workers	Annual Output	Location	Output
China (中國玻璃廠)	$5,000	90	$90,000	San Yang Rd., Chapei (閘北三陽路)	Glasswares
Chung Hua Feng Chi (中華鳳記)	45,000	130	250,000	W. Paching Rd., Chapei (閘北西寶興路)	〃
Kung I (公益)	50,000	120	240,000	Yung Hsing Rd., Chapei (閘北永興路)	Glass bottles
Pootung No. 1 (浦東第一)	10,000	110	90,000	Heng Feng Rd., Chapei (閘北恒豐路)	Lamp shades
Hsieh Chang (協昌)	30,000	180	150,000	Hsiang Yen Bridge, Chapei (閘北香煙橋)	——
Kuang Ming (光明)	180,000	150	200,000	Ching Yun Rd., Chapei (閘北青雲路)	Hot water bottles, lamp shades
Tung Ho (同和)	8,000	100	100,000	Koo Chia Rd. (顧家路)	Glass bottles
Kung Hsing (公興)	6,000	80	50,000	Chi Mei Rd. (其美路)	〃
Kuang Tai Hsing (廣泰興)	5,000	80	50,000	Tien Tung An Rd. (天通庵路)	Glass bulbs and bottles
Chien I Hsing Chi (謙益興記)	20,000	140	100,000	Chung Shan Rd. (中山路)	Lamp shades, Glass bottles
Han Chong (漢鋐)	5,000	80	70,000	Chapei	Hot water bottles
Tsu Chen (志成)	15,000	—	150,000	Chung Shan Rd.	Glass bottles
Tze Kang (滋康)	10,000	130	100,000	Chi Mei Rd.	Glass bottles
Hsing Hua (興華)	6,000	24	15,000	——	Lamp shades

Chen Ho (正和)	40,000	120	100,000	Chi Mei Rd.	Hot water bottles
Kung Chi (公記)	10,000	100	70,000	Chi Mei Road	Glass bottles
Hua Feng (華豐)	20,000	120	50,000	"	Glass wine bottles
Tung Chi (同記)	10,000	120	100,000	Koo Chia Road	Glass bottles
Hsieh Hsin (協新)	5,000	80	40,000	Penang Rd. (檳榔路)	Glass bottles
Hua Hsin (華新)	5,000	40	20,000	Ta Ku Rd. (大沽路)	Glass plates
Liang I (兩宜)	20,000	150	200,000	Shang Yen Bridge	Glass bottles
Chung Han (中漢)	100,000	160	300,000	Tang Shan Rd. (唐山路)	"
Yao Yeh (耀業)	200,000	240	250,000	Kiaochow Rd.	"
Tsing Ming (晶明)	50,000	160	100,000	" "	"
Hua Kuo (華國)	30,000	100	120,000	W. Pao Hsing Rd. (西寶興路)	"
Yi Tsing (藝精)	5,000	80	80,000	San Yang Rd. (三陽路)	"
Ming Tsing (明精)	6,000	70	60,000	" " "	"
Hsieh Lung (協隆)	8,000	—	70,000	Chi Mei Road	Glass wine bottles
Chung Hsing (中興)	6,000	120	100,000	Chi Chiang Rd. (吉祥路)	Glass bottles
Teh Hsing (德興)	20,000	140	140,000	Au Yang Rd. (歐陽路)	Small glass bottles
Ho Hsing (合興)	5,000	70	40,000	" " "	" "
Tsing Hsing (晶興)	50,000	100	220,000	Ferry Rd. (少沙渡路)	Glass bottles
Tsing Hua (晶華)	40,000	180	200,000	Brenan Rd. (白利南路)	"
San Sing (三星)	6,000	80	60,000	Heng Feng Rd. (恒豐路)	Hot water bottles
Hung Fu (鴻福)	10,000	80	50,000	Wuchow Rd. (梧州路)	Lamp shades
Tien Chen (天成)	10,000	120	100,000	Kao Long Chiao (高郎橋)	Glass bottles
Yu Lien (友聯)	8,000	50	60,000	San Yang Rd. (三陽路)	"

RAW MATERIALS

The chief raw materials used in glass making consists of silicate, salt peter, flourspar, manganese powder and alkali. A brief description of each of these is as follows:—

Silicate:—In its free natural state, silicate is found in the form of flints, quartz, and sand; and the latter variety is generally used for glass-making. Silicate sand may contain aluminium and potassium, calcium and potassium, calcium and sodium, aluminium, sodium and calcium, or potassium, sodium and calcium. On Chinese markets the most popular varieties are "white" and "black" silicate, the former containing less iron, being more suitable for making glass of high quality. The best "white sand" comes from Hongkong, at a place called Pashaho (白砂河). An analysis of the sand shows the following constituents: SiO_2, 99.50%, Al_2O_3, 00.25%, Fe_2O_3, 00.05%, and residue, 00.50%.

"White sand" is also found in many other places, and among them, Poshan (博山), Tzechuan (淄川), Chefoo and Luankow (灤口) of Shantung, Kingchow (金州), Fuchow (復州), Port Arthur and Dairen of Liaoning; Peiping, Tangshan (唐山), Chinwangtao (秦皇島) of Hopei; Imienpo (一面坡) of Heilungkiang; Suchien and Tungshan of Kiangsu, Ningpo of Chekiang, Changsha and Liling (醴陵), of Hunan, Huaiyuan (懷遠) and Kinshan (荊山) of Anhui, Kouchang (狗場) of Kuichow and Chungking (重慶) of Szechuen are the most famous.

Saltpetre:—Saltpetre or sodium sulpate is abundant in the Three Eastern Provinces, Shantung, Hopei, Honan, Shansi, Kiangsu, Hunan, Kuichow, and Hupeh, with those found in Shantung, Kiangsu and Hupeh leading in quality. In consequence of difficulties of transportation, it is so expensive that most factories prefer to buy from Chile. Recently, a Government refinery is operating at Kaifeng (開封), Honan, where crude saltpetre is collected and the refined mineral obtained is over 98 per cent pure and of excellent quality.

Lime—is found practically everywhere throughout the country but the following places are most important: Fangshan (房山), Choli (坨里), Wanfutang (萬佛堂), Yuanping (宛平), Changsintien (長辛店), Tangshan (唐山), Kaiping (開平) of Hopei, Lungtan (龍潭), Ihsing of Kiangsu, Tayeh (大冶), Kwangtsi (廣濟) of Hupeh, Wuan (武安), Anyang (安陽), Siuwu (修武), Shenchow (陝縣) of Honan, Taiyuan (太原), Kiaocheng (交城), Changchi (長治), Lucheng (潞城), Siangyuan (襄垣) of Shansi, Changshan (常山), Fuyang (富陽), Changhing (長興) of Chekiang, Tsinan, Poshan, Changkiu (章邱), Tzechuan of Shantung, Meiling (梅嶺) and Yingtah (英德) of Kuantung.

Flourspar—is found in Shantung, Chekiang, and Liaoning with the last named leading in production. According to a report issued by the Provincial Reconstruction Department of Chekiang that the annual production of flourspar amounts to over 30,000 tons, valued at about $390,000. The mines already in operation in Chekiang are located in Wuyi (武義), Kinhua (金華), Siangshan (象山), Chuki (諸暨), Kiangshan (江山), Chenhsien (嵊縣), Sinchang (新昌), Iwu (義烏), Pukiang (浦江), Wuhing (吳興), Pingyang (平陽), Tungyang (東陽), Yungkang (永康), Lingan (臨安), Lishui (麗水) and Lungyu (龍遊).

Manganese powder is obtainable in the provinces of Kuangtung, Kuangsi, Hunan, Kiangsi, Hupeh, Chekiang, and Liaoning. In former days, however, this chemical was almost entirely imported from Japan, owing to absence of good refineries in China. The producing districts of this chemical is distributed as follows: Siangtan (湘潭), Holing (鶴嶺), Laiyang (來陽), Changning (常寧), Yoyang (岳陽), Tsingkang (青崗), Changsha (長沙), Anjen (安仁), and Fenghsien (豐縣) of Hunan, Fangchen (防城) and Chinhsien (欽縣) of Kuangtung, Wuhsuan (武宣) and Kuiping (桂平) of Kwangsi, Lohping (樂平) of Kiangsi Tayeh (大冶), and Yangsing (陽新) of Hupeh, Hsingchen (興城), Fengcheng (鳳城) of Liaoning, Changping (昌平) and Si Hu Tsun (西湖村) of

Hopei, Tsimu (即墨) and Laoshan (勞山) of Shantung, and Hangchow (杭州), Lungmenshan (龍門山), and Yuhang (餘杭) of Chekiang.

Alkali.—In its natural form alkali is found in northwestern provinces. As the Pacific Alkali Company of Tangku (塘沽永利製碱廠) is the only Chinese factory producing soda ash and caustic soda, large quantities are imported from Great Britain to make up the deficiency.

Sulphuric acid—is mostly imported as domestic production is not enough. There are only a few factories engaging in turning out this chemical, and among them the Tien Yuan (天原) and Kai Chen (開成) at Shanghai, and Teh Li San (得利三) at Tientsin are the most prominent, their output being very limited.

PRODUCTION

The products of glass factories consists of all forms of lamp chimneys, lamp shades, glass bottles and various descriptions of glass wares. For shipment the glasswares are wrapped with straw and paper and then packed in crates or boxes. Lamp shades of small size are usually packed in crates of 120 dozen each, while large size shades are packed in crates holding eight to nine dozen each. Glass bottles are usually packed in crates of from 60 to 200 dozen each, while glass sheets are in boxes of two or three catties each.

Besides being used in Kiangsu Province glasswares are also marketed in Honan, Kiangsi, Anhui, and Hupeh. In Shanghai glasswares are shipped to Wuhsien, Wusih, Kunshan, Changshu, Wuchin and Tsingpu by junks through the Soochow Creek, to Nanhui, Fenghsien, Sungkiang, and Chinshan through the Yangtse River, and to Nanking, Tanyang, and Chinkiang through the Nanking-Shanghai Railway. The product destined for Wuhu of Anhui, Changsha of Hunan, Kiukiang of Kiangsi, Hankow of Hupeh are shipped by steam launches. The export duty for glasswares is Hk. Tls. 0.05 a catty in addition to Hk. Tls. 0.025 as surtax. These taxes are borne by factories but if the buyers make their purchases in Shanghai, the taxes are to be borne by themselves.

Among the glasswares produced in Shanghai the most popular varieties are various forms of lamp shades, inkstands, hot water bottles, and ash trays. The annual output at Shanghai is valued at over $3,500,000, of which about $1,500,000 worth of cargo go to Kiukiang, Wuhu and Hankow.

Aside from home production large quantities of glasswares are also imported from abroad. The following table shows the imports of glasswares, glass sheets and glass bottles during the last five years ending 1931:—

	Glass wares	Glass Sheets	Glass Bottles
1927	623,546	718,808	691,986
1928	844,080	1,451,560	606,112
1929	938,760	2,060,743	605,356
1930	1,017,580	2,207,026	555,555
1931	928,245	2,581,664	933,088

TRANSACTION

Glass business in Shanghai is transacted either by special order, wholesale or retail. In special order the buyer has to write a letter to the glassworks indicating the quantity and description of goods that he wants. When the price is agreed upon the buyer has to sign a contract with the works on which the date of delivery is also affixed. The contract is made in duplicate form, one being kept by the works while the other by the buyer. When the goods are ready for delivery the works immediately notifies the buyer and the consignment is delivered after the goods are paid. If the buyer fails to pay for the goods on the prefixed date of delivery without any good reason, the buyer has to pay the storage fee. If the goods are still not paid for after one month, the works has the right to dispose of the goods by auction and any deficit occurred is to be made up by the buyer.

In wholesale buyer goes direct to works and selects what he wants. When the price is agreed the buyer pays in advance a certain sum as deposit and the balance is settled at the time when the goods are delivered. The

delivery expenses are borne by the buyer. The works is not responsible for any damage done to the goods during shipment.

In retail business the works employs canvassers to solicit orders from various stores and when the price is agreed the deal is concluded by paying the cash. In case the store is a regular customer a pass book is issued by the works and account is settled at the end of each month.

CHAPTER XLVII

PAPER BOXES

THE MANUFACTURE of paper boxes is not a new enterprise in Kiangsu Province, but before the development of Shanghai as an industrial center boxes were made chiefly by women and children, working at home as a sideline with other occupations. The first factory for making paper boxes by machinery was established in Shanghai in 1919, when there was a large demand for cigarette packets in consequence of the establishment of many tobacco factories. This concern, however, closed down after a short period of operation, but many factories of a similar nature have been started since 1924, until at present there are 27 box-making establishments equipped with Western machinery, in addition to approximately 600 small manufacturers following old-fashioned methods.

PRESENT CONDITIONS

Paper box factories are scattered all over Shanghai, but Ward Road (華德路) in the east, Hsiao Sha Tu (小沙渡) in the west, and the Chinese city in the south are the principal centers of operations. Most of those in the first two areas are principally engaged in making cigarette packets, while those in the Chinese city manufacture boxes for hats, boots, hosiery, confectionery, medicine, and other household articles.

With the exception of the Heng Shen (恆盛), Gojima (剛島), and Hua Nan (華南) concerns, which are Japanese owned, the paper box factories in Shanghai are operated by Chinese, the best known being the Han Fang (含芳),

which has a capital of $30,000 and is located in Ferry Road. Other factories having a capital exceeding $10,000 are the Ta Cheng Hua (大正華), Hua An (華安), Chung Kuo (中國) and Feng Tai (豐泰). About 80 per cent of the larger organizations are partnerships.

The number of workers employed ranges from 10 to about 60, and as a rule the male hands do the more important part of the work. Wages are paid on a time or piece basis. Those who receive monthly wages, varying from eight to 12 dollars, are also given free board and lodging. Piece-work wages are paid every month-end, computed by the thousands of boxes handed in, the most skillful workers earning about $25 a month, others getting from $10 to $16. No allowance for food and lodging is paid to piece-workers except on very rare occasions, when a grant of five or six dollars is given. The highest monthly wage for women is about $23, and for a child worker about $8. In many factories wages are calculated by hours—generally nine and a half per day. A night shift lasts three hours, but is paid for as half a day.

Modern machinery for making cartons and cigarette packets has been installed in many of the larger factories, either Chinese made or imported from the United States, Germany and Japan. Other details are as follows:—

Factory.	Location.	Established.	Organization.	Capital.	No. of Workers.	Annual Output	
Han Fang (含芳)	101 Ferry Road (小沙渡路一〇一號)	1928	Partnership	$30,000	51	7,200,000 18,000,000	rubber shoe containers cigarette boxes
Hua An (華安)	13 Hwakee Road (華記路十三號)	1927	"	20,000	31	9,600,000	cigarette boxes
Chung Kuo (中國)	246 Shou Chun Li, Miller Road (密勒路壽椿里二四六號)	1927	"	20,000	53	700,000,000	cigarette boxes
Ta Cheng Hua (大正華)	196 Tongshan Road (塘山路一九六號)	1927	"	20,000	65	200,000,000	cigarette boxes
Feng Tai (豐泰)	1068 Chin Fu Li, Baikal Road (倍開爾路晉福里一〇六八號)	1930	Corporation	10,000	27	50,000,000	cigarette boxes
Chow Tung Hsing (周同興)	775 West Pao Hsing Road (西寶興路七七五號)	1931	Individual Proprietorship	6,000	53	1,200,000	cosmetic boxes
Hsing Chang (興昌)	460 Singapore Road (星加坡路四五〇號)	1930	"	5,000	39	1,000,000	hosiery boxes
Chung Hua (中華)	Chen Hou Li, Tongshan Road (塘山路成厚里)	1930	Partnership	5,000	10	1,000,000	paper bags
Yung Chi (永記)	151 Chuan Hsin Chieh, Old North Gate (老北門穿心街一五一號)	1925	Individual Proprietorship	5,000	80	3,000,000	cartons
Mao Tai Hsiang (茂泰祥)	23 Rue de la Porte du Nord (老北門路廿三號)	1912	"	5,000	19	3,000,000	cartons
Chung Fa (中法)	433 Rue du Marche (菜市路四三三號)	1930	Partnership	3,000	7	1,000,000	cartons

Hua Lun (華倫)	288 Nan Hsing Li, Paoting Road (保定路南興里二八八號)	1929	Partnership	3,000	20	3,000,000	cigarette boxes
Ohia Ting (家鼎)	Neighborhood of Shanghai District Court (上海地方廳附近)	1926	Corporation	3,000	40	700,000	cosmetic boxes
Mo Yung Hsing (莫永興)	656 Shuang Hsing Li, Hsieh Hsu Road (斜徐路雙興里六五六號)	1927	Individual Proprietorship	3,000	17	1,000,000	cigarette boxes
Li Tai Hsing Chi (裡泰興記)	20 Jui Chang Li, Route Capitaine Rabier (蕊昌路濟昌瑞里二〇號)	1926	Partnership	2,000	50	1,200,000	cartons
Wu Feng (五豐)	Corner of Ward Road and Paoting Road (華德路保定路口)	1928	"	2,000	30	1,000,000	cigarette boxes
Chen Hua (振華)	Hung Yun Terrace, Ward Road (華德路鴻運坊)	1930	"	1,000	10	1,000,000	cartons
Chiu Chi (久記)	11 Sun Yuan Li, Arsenal Road (製造局路蓀元里十一號)	1932	"	3,000	30	500,000	hosiery boxes
Peiping Sheng Chi (北平勝記)	375 Chusan Road (舟山路三七五號)	1930	Individual Proprietorship	2,000	8	700,000	cartons
Hua Hsin (華新)	63 Shuan Kwei Li, Rue Pere Dugout (杜神父路雙桂里六三號)	1930	Partnership	1,000	18	1,000,000	cartons
Ta Chung Hua (大中華)	Hen Chang Li, Rue Amiral Bayle (貝勒路恒昌里)	1931		1,000	15	100,000,000	cartons
Mei Hua (美華)	1 Yu Cheng Li, Rue de Pere Froc (勞神父路玉振里一號)	1931	Individual Proprietorship	1,000	10	12,000	cartons
Min Hsing (民興)	4 Chai Hua Li, Chung Hwa Road (中華路載華里四號)	1927	Partnership	1,000	14	10,000	cartons

RAW MATERIALS

The paper for making cigarette packets is generally supplied by tobacco factories in order to be certain that the material used is of the required standard. Paper pasted inside the boxes is mainly printing paper, white news print, cap, etc., while flint glazed paper, coloured news print, and coloured glazed print are used for surfaces. Containers made of corrugated paper are usually pasted on the outside with kraft wrapping paper.

The sliding container of a cigarette packet is made of paper of cheap quality, imported either from the United States or Japan. The paper from the latter country is of three varieties, known as K, A, and B, the size being 31″×43″, and costing about 24 taels per ream. Among the Chinese mills making box paper the Tien Chang (天章), Yangtszepoo (楊樹浦), Shanghai, is best known, and sells for 22 taels. Paper for the outer portion of the packet must be of superior quality, and is imported from Japan and America, costing at present about 28 taels per ream.

There are half a dozen other kinds of paper used in bdx-making, and although there are many paper-mills established in various parts of Kiangsu and Chekiang, supplies are still being taken from the United States, Japan, Sweden, Holland, etc.

White Board—is mainly imported from Japan and Holland, though supplies are also obtained from the Ming Feng Paper Factory (民豐造紙廠), Kashing (嘉興), Chekiang. The Japanese card is 27′ 2″×39′ 2″, while the Dutch and Chinese varieties, are 27″×39″

Green and Grey Board—is now supplied by many Chinese factories, notably the King Cheng Paper Mill (竟成造紙公司), Shanghai, which turns out 21 tons a day. Japanese supplies are also used, and sizes vary from 25″×30″ to 27″×31″.

Yellow Board—Japan was formerly the only source of supply for yellow board, but lost the market soon after the establishment of many Chinese mills in Chekiang and Kiangsu, namely, the Hua Feng Paper Mill (華豐造紙公), Hangchow, the Ming Feng Paper Factory, Kashing,

the Hua Shun Yi Chi Cardboard Factory (華盛益記紙板廠) and the Ta Hua Paper Mill (大華造紙廠), Wuhsien, the products of the last two mills selling respectively under the brand of "Phoenix" (鳳凰) and "Racing Horse" (賽馬).

News Print—comes mostly from Sweden and Japan, though also manufactured by the Tien Chang mill, Shanghai. The qualities used by box factories are generally from 37 to 45 lb., sizes ranging from 31″×43″ to 32″×45′ 2″,, with an average price of about four dollars per ream.

Flint Glazed—commonly used is of two sizes, 20″×50″ and 20″×30″. Colored or plain paper is mostly imported from Japan, and may be yellow, red, blue, white, or black, costing about six taels per ream. Varieties with designs, however, are imported from Holland, costing about nine taels a ream, while embossed paper comes from Germany, costing about seven taels.

Kraft Wrapping Paper—mostly comes from Sweden and Norway, and is pasted on corrugated paper containers. The Chinese product made by the Tien Chang mill is now in good demand for general use, but is seldom employed in box-making on account of its quality not being quite suitable.

Corrugated Paper—The only Chinese mill making corrugated paper is the Ming Feng factory, Kashing, the price being about $5.60 per 100 sheets.

Printing Paper—is made at the Tien Chang mill, Shanghai, among other local manufacturers, and is also from Great Britain, Japan, and Sweden. Printing paper is classified into three divisions according to size, 31″×43″, 27″×40″ and 25″×37″. The Tien Chang product is of comparatively poor quality, fetching about four dollars per ream.

Glue—sells for 24 taels per 120 pounds, with Great Britain, the United States, Germany, and Japan the chief exporting countries.

Wire—for fastening box corners is obtained from Japan, the United States, Germany, and Great Britain.

MARKETING

According to a recent estimate, the annual consumption of paper for making cigarette packets in Shanghai totals at least 46,350 reams, at an average price of 25 taels, each ream being good for 21,200 boxes. The cardboard consumed by different factories ranges from 40 to 300 tons a year, as follows: Chung Kuo, Han Fang, and Chia Ting, 300 tons; Chung Fa, Hsing Chang, Mao Tai Hsiang, Li Tai Hsing Chi, Hua Hsin and Yung Chi, 100 to 200 tons; other factories, 40 to 60 tons. The annual consumption, therefore, must exceed 2,620 tons, with an aggregate value of approximately Tls. 170,235. With regard to flint glazed and printing paper, the Han Fang factory annually consumes more than 1,000 reams, Hsing Chang, Chiu Chi and Peiping Sheng Chi 700 reams each, and Mei Hua and Chow Tung Hsing, 240 reams each, while the smaller mills use about 60 reams each. A recent estimate puts the annual purchase of these two descriptions of paper at 4,200 reams, worth Tls. 37,770, against a total value of box-making material consumed in Shanghai of about Tls. 1,396,700.

The increasing number of cigarette, knitting, perfumery, vacuum flask, rubber shoe, and confectionery factories in Shanghai during recent years has caused a great demand for paper boxes and bags. Consequently, the output—considerable as it is—barely meets the demand, and there is room for development and expansion in this industry if general industrial conditions remain favorable.

CHAPTER XLVIII

BONE ENGRAVING

THE MOST important line in the bone engraving industry of Kiangsu Province is the making of mahjongg sets. Mahjongg is a kind of gambling game invented by fishermen of Ningpo, later extended to whole country, and at a time, it even became a very popular in both Europe and America. In 1923, as the demand from foreign countries was so pressing that a special factory was established at Paoshon by an American firm in Shanghai. The factory employed over 500 operatives, recruited from various places, and its total output amounted to over 1,000 sets per month. According to those in the trade, in 1921, the total value of mahjongg sets shipped to the interior being Tls. 27,805, and those shipped to foreign countries, Tls. 26,251; but in 1922, the value of those shipped to the interior being reduced to Tls. 24,630, while those exported abroad, increased to Tls. 240,902. In 1923, the value exported abroad further increased to Tls. 2,800,000. Unfortunately, after this climax, owing to the poor workmanship and the prohibition in the United States, the industry suffered a big slump, though a considerable quantity is still shipped to Japan. After the Manchurian incident in 1931, and especially the Shanghai incident in 1932, the Japanese market was also lost.

PRESENT CONDITIONS

Like other industries, the mahjongg engraving business is centered in Shanghai, with Wuhsien the next place of importance. In Shanghai, up to the end of 1932, the total number of mahjongg engravers operating in Shanghai was 38, and the details being tabulated as follows:

		Established	Capital	No. of Workers	OUTPUT Amount	Value	Total Value
Wu Wan Chen	(吳萬成)	1926	$3,000	14	Mahjongg: 600 sets	$3,000	$ 9,000
					others	6,000	
Ling Yung Hsin	(林永興)	1921	4,000	16	Mahjongg: 600 sets	3,000	11,000
					others	8,000	
She Mou Chang	(佘茂昌)	1924	3,000	10	Mahjongg: 400 sets	2,000	9,000
					others	7,000	
Yu Sing Chen	(裕信成)	1930	4,000	8	Mahjongg: 600 sets	3,000	10,000
					others	7,000	
Yu Chang Hsiang	(裕昌祥)	1916	3,000	10	Mahjongg: 500 sets	2,500	8,500
					others	6,000	
Sing Yuan Shen	(新源勝)	1928	3,000	5	Mahjongg: 500 sets	2,500	6,500
					others	4,000	
Chang Yi Hsin	(張義興)	1894	5,000	9	——	10,000	10,000
Hsieh Tai	(協泰)	1926	3,000	6	Mahjongg: 400 sets	2,000	7,000
					others	5,000	
Shen Tai	(森泰)	1926	3,000	5	Mahjongg: 400 sets	2,000	7,000
					others	5,000	
Hsu Chin Hsin	(徐錦興)	1927	4,000	6	Mahjongg: 600 sets	3,000	9,000
					others	6,000	
Tung Feng Chang	(同豐昌)	1896	3,000	12	Mahjongg: 600 sets	3,000	8,000
					others	5,000	
Yi Shen Hsiang	(益盛祥)	1928	5,000	14	Mahjongg: 700 sets	3,500	10,000
					others	6,500	

Yung Chi Hsiang	(永吉祥)	1926	5,000	12	Mahjongg: 600 sets	3,000	11,000
					others	8,000	
Yung Hsin Chang	(永興昌)	1925	5,000	11	Mahjongg: 700 sets	3,500	12,000
					others	8,500	
Wang Feng Hsiang	(萬豐祥)	1927	4,000	12	Mahjongg: 600 sets	3,000	9,000
					others	6,000	
Heng Yu Chang	(衡裕號)	1930	5,000	12	Mahjongg: 500 sets	2,500	10,000
					others	7,500	
Yu Chang Hsiang	(裕昌祥)	1903	2,000	15	Mahjongg: 800 sets	4,000	12,000
					others	8,000	
Tien Yi Sheng	(天益盛)	1921	5,000	20	Mahjongg: 700 sets	3,500	13,500
					others	10,000	
Tung Mou Chang	(同茂昌)	1915	6,000	18	Mahjongg: 600 sets	3,000	11,000
					others	8,000	
Yi Tai Hsiang	(怡泰祥)	1923	4,000	15	Mahjongg: 400 sets	2,000	8,000
					others	6,000	
Chow Yi Chi	(周義記)	1915	4,000	8	Mahjongg: 600 sets	3,000	10,000
					others	7,000	
Chiang Tai Chang	(蔣泰昌)	1927	3,000	7	Mahjongg: 700 sets	2,500	7,500
					others	5,000	
Chu Heng Shen	(朱恒生)	1930	3,000	7	Mahjongg: 600 sets	3,000	9,000
					others	6,000	
Yi Cheng Chang	(義盛昌)	1920	2,000	8	Mahjongg: 500 sets	2,500	9,500
					others	7,000	
Wang Shun Hsin	(王順興)	1921	4,000	10	Mahjongg: 600 sets	3,000	11,000
					others	8,000	

Ling Shun Feng	(林順豐)	1915	3,000	11	Mahjongg: 500 sets	2,500	9,500
					others	7,000	
Mao Yung Hsin	(毛永興)	1913	5,000	10	Mahjongg: 600 sets	3,000	9,000
					others	6,000	
Chin I She	(清一色)	1923	3,000	8	Mahjongg: 500 sets	2,500	7,500
					others	5,000	
Yu Tai Lung	(裕泰隆)	1920	4,000	9	Mahjongg: 400 sets	2,000	9,000
					others	7,000	
Hsieh Yuan Hsin	(謝源興)	1912	3,000	12	Mahjongg: 600 sets	3,000	11,000
					others	8,000	
Hsu Yung Shen	(徐永勝)	1923	3,000	6	Mahjongg: 600 sets	3,000	7,000
					others	4,000	
Tung Chen Ta	(董震大)	1915	2,000	5	Mahjongg: 500 sets	2,500	8,500
					others	6,000	
Tung Heng Shen	(董恆勝)	1921	3,000	7	Mahjongg: 600 sets	3,000	7,000
					others	4,000	
Ting Hsin Co.	(鼎興公司)	1928	3,000	10	Mahjongg: 1,000 sets	5,000	10,000
					others	5,000	
Tung Jen Ho	(同人和)	1927	3,000	7	Mahjongg: 500 sets	2,500	8,500
					others	6,000	
Chen Lung Hsin	(陳隆興)	1922	3,000	6	Mahjongg: 600 sets	3,000	8,000
					others	5,000	
Tien Shun Hsiang	(天順祥)	1916	4,000	8	Mahjongg: 700 sets	3,500	7,500
					others	4,000	
Lao Yung Hsin	(老永興)	1973	2,000	12	Mahjongg: 600 sets	3,000	7,000
					others	4,000	

As mahjongg is entirely engraved by hand, so there is no factory whatsoever is established, and those engaged in this business usually have their workshops and sales department in one small shop. But in the workshops, only engraving is taken place, while the bamboo and bone cuttings are done by a separate class of workers.

No large capital is required for the mahjongg engravers, so the total capital of the 38 shops in Shanghai amounts to $136,000 only, with an average of $3,579 each. Analytically, there are four shops captitalized with $2,000, 17 with $3,000, nine with $4,000, seven with $5,000, and one with $6,000.

The total number of regularly employed workers of the 38 shops is 381, and if the number of piece-work operatives and apprentices is added, the grand total will exceed 900. The average wages for regular workers being $12 a month.

RAW MATERIALS

Bamboo and bone are the raw materials for the making of mahjongg sets. Bamboo is obtained from Hangchow and Ningpo, and judging bamboo is a task that only an expert can undertake. Four or five pieces of bamboo may look the same to the uninitiated, but to the expert would be separately classified. One piece might be subject to shrinkage, another to warpage, and another might develop worms. These are very important considerations in the manufacture of mahjongg, for a very profitable connection might be entirely ruined as the result of one worm-eaten set, irrespective of the fact that it was the only inferior set in thousands. As worms deposit their eggs in bamboo at a certain season, bamboo is cut at a definite season too. After being shipped to Shanghai, it is dried in the sun for 18 months before cut into small pieces and sell them to mahjongg engravers at the price of one copper for five.

As to bone, only the shinbone of the beef is used. Many specifications are required. It must be of a certain weight, and it must not have more than a certain amount

of grease. The round shinbone is generally employed in making sets of thick bone surface, and out of every ton of bone, 180 sets can be made. The flat shinbone is used in the making of sets of thin bone surface, and every ton of this kind of bone is sufficient to produce 225 sets. Most of the bone used is imported from the United States as it appears more white and clean than the Chinese product. According to those in the trade, 1,600 piculs of bone, valued at $40,000, are annually consumed by the mahjongg engravers in Shanghai.

In some expensive sets, ivory is used in the place of cow bone. Ivory is chiefly imported from Siam, and the annual consumption in Shanghai amounts to 150 piculs, valued at Tls. 105,000.

OUTPUT

According to a recent investigation the total output of mahjongg sets in Shanghai is only 21,300 sets a year, and calculated at an average of $5 per set, the aggregate value is $106,500 only. The output for other articles such as cigarette holders, seals, chopsticks, and combs, amounts to the value of $230,500 a year.

One single mahjongg set is the result of many people's work. In addition to the preparation of the bamboo, which is an industry in itself, the bone has to be prepared. The bone is sold to jobbers in Shanghai in ton lots and they retail it in picul lots to a class of joiners. These joiners cut up the bone and join the pieces to the bamboo that has already been obtained from dealers in the interior. The pieces is then sold to the so-called mahjongg manufacturer in the rough. The blank pieces are than smoothed and polished. After being engraved and colored, which are done by separate classes of workers, they are ready for assembling with the accessories, such as counters and discs, and the cabinet, which also come from other factories.

MARKET

In addition to local consumption, a small quantity is also exported to Japan and the United States. For export abroad, the sets are packed in units of 50 sets, the cabinets being packed separately. The sets go in 10 tin cartons, five sets to a carton, and the accessories are packed in two similar cartons. These 12 cartons are transported in a strong case. Weight vary according to the grades of the sets, but in measurement roughly 100 sets go in the ton of 40 cubic feet.

CHAPTER XLIX

MACHINE-MADE CORD

THE machine-made cord industry in Kiangsu Province was started by the Hsieh Chi Factory (協記機器造繩廠) in 1914. This concern was first established at Wuhsien, but owing to bad business was later removed to Shanghai. Subsequently a large number of factories were started until there are now 44 factories operating in the Province, 38 of which are in Shanghai, with others at Chinshan, Kiating and Sungkiang.

The product of these factories is confined to "grass" cord, made of dried rice-stalks. Cord is made in seven different sizes, details being as follows:

		Average Weight Per Buudle (catties)	Total Length (Feet)	Weight Per Foot (liang)
Size No.	1	20	450.00	0.8
„	2	20	571.44	0.56
„	3	20	909.33	0.352
„	4	20	1,333.33	0.24
„	5	20	1,632.66	0.196
„	6	20	2,461.33	0.13
„	7	20	3,200.00	0.1

In making "grass" cord two kinds of machines are used, the sorting machine to remove all impurities from the rice-stalks and cut them to uniform length, and the plying machine, operated by treadle, used to twist the stalks into cord. Formerly these were imported from Japan, but in recent years Chinese machines have gradually replaced the imported article. The prices of these machines, as turned out by the Shanghai Cord Factory (上海造繩廠), are as follows:—two-ply machines, $40, three-ply machines, $45, and large size (special) machine, $55. Another machine specially designed for making fine cord has been turned out by the same factory, and the annual production of this description of machine amounts to about $6,000,000.

The capacity of a cord-machine varies according to size, details being tabulated as follows:

"Grass" cord Machines	Daily Production (catties)	Hemp cord Machines	Daily Production (catties)
Size No. 1	150	Size No. 1	100
„ 2	120	„ 2	70
„ 3	90	„ 3	50
„ 4	70	„ 4	35
„ 5	60	„ 5	25
„ 6	40	„ 6	15
„ 7	30	„ 7	10
		„ 8	6
		„ 9	4

The total number of machines in the factories of Kiangsu is over 720. Calculated at an output of 15 piculs per day by ten machines, the aggregate output is estimated at over 1,000 piculs, or over 380,000 piculs, or over 380,000 piculs a year, but after the Sino-Japanese hostilities in Shanghai in 1932, a decrease of 30 per cent in trade was recorded.

The cost of rice-stalks is 50 cents per 100 catties, but after sorting only 50 per cent can be used for making cord, the remainder being sold to paper-makers at 25 cents per 100 catties for making *chi chin* (紙筋), a very coarse paper used in building when mixed with lime and water. Details in regard to cost of production are as follows:

Cord	Daily Output for 10 Machines (catties)	Wages	Total Cost
Size No. 1	1,500	$4.05	$15.30
„ 2	1,200	3.60	12.60
„ 3	900	1.06	9.81
„ 4	700	2.80	8.05
„ 5	600	2.76	7.66
„ 6	400	3.00	6.00
„ 7	300	2.64	4.89

In the manufacture of hemp cord the cost is much higher, as the price of ramie is sometimes as high as Tls. 22 per picul (Tls. 18 in 1932). Details in regard to costs are as follows:

Cord	Daily Output for Every 10 Machines (catties)	Wages	Total Cost
Size No. 1	1,000	$3.00	$252.60
„ 2	700	„	150.62
„ 3	500	„	126.30
„ 4	350	„	89.33
„ 5	250	„	64.65
„ 6	150	„	39.99
„ 7	100	„	27.66
„ 8	60	„	17.79
„ 9	40	„	12.86

The operatives are chiefly female workers, who attend to the machines, while the work of packing and delivery is entrusted to male workers. Wages are paid at piece-rate, 60 cents per picul for Size No. 1 cord, 70 cents per picul for Size No. 2 cord, and $2 per picul for Size No. 10 cord. Calculated on a daily basis, a male worker receives about 50 cents a day, and a woman from 30 to 40 cents. The wages for mechanics are from $18 to $24 per month, and for delivery coolies from $10 to $12.

The total sale of cord produced by factories in Kiangsu during 1931 amounted to $798,000, reduced to about $500,000 in 1932. The price of various cords is fixed by the Kiangsu Cord-Makers' Union, formed in 1931, as follows:

Size	Price Per Picul	Size	Price Per Picul
Special	$2.10	No. 5	$2.90
No. 1	2.10	No. 6	3.40
No. 2	2.20	No. 7	3.60
No. 3	2.30	No. 8	4.10
No. 4	2.50	No. 9	4.60

Rice stalk is chiefly obtained from Sungkiang, these being long and soft, and very suitable for cord-making. Ramie is produced in Hunan and Hupeh, and coir in Szechuen, but both products can be also obtained from Shanghai agencies.

Cord is exempt from all taxes and duties, and business is always done on cash basis, but for special cases credit is arranged, accounts to be settled at the end of each month

CHAPTER L

RAYON LACE AND SILK CORD

BEFORE 1914, considerable quantity of rayon lace was imported into China from Germany. When the World War broke out and Germany was cut off from her oriental market, Chinese maufacturers seized the opportunity to establish factories for the manufacture of this article, and as the demand for it has been increasing in volume, many factories came into existence. In this Province, there are more than forty of these factories, and most of them are found in Shanghai. Most of the factories produce artificial silk cords as well as laces.

Formerly, all the machinery used in lace and cord making was imported from Japan. Chinese machines did not appear until quite recently. At present, however, Chinese machines are used in all except a few old factories. The following table shows the manufacturers, price and capacity of machines used in manufacturing laces and cords.

Name of Machine	Manufacturer	Price	Daily Capacity
Lace Machine	I Feng (義豐)		192 yds.
	Shen Heng Chang (沈恒昌)	$1.00 (per spindle)	
	I Shun Hsing (益順興)		
"		$3.00 (per spindle)	210 yds.
Cord Machine	I Feng, Shen Heng Chang, I Shun Hsing	$15.00	252 yds.
Rayon Reeling Machine	I Feng, Shen Heng Chang, I Shun Hsing	$200.00	100 yds.
Rayon thread Machine	I Feng, Shen Heng Chang, I Shun Hsing	$200.00	200 yds.

Only male hands are employed in artificial silk lace factories. They are paid either by month at $3 to $30 per month or by piece rate as follows:

	Rate of Payment	Daily Capacity
Lace maker	2-3 cents per 24 yds.	1,000 yds.
Cord maker	0.5-0.7 cent per 36 yds.	1,500 yds.
Worker engaged in rayon reeling	3-4 cents per 10 lbs.	120 lbs.
Worker engaged in making rayon threads	3-4 cents per 10 lbs.	120 lbs.

The working period in these factories is about ten hours daily and night shifts are employed during busy seasons.

Rayon is the principal raw material for the manufacture of lace and cords. It is imported from Italy, Great Britain, U.S.A. and Japan, but Japanese products are no longer used now. Lace manufacturers buy rayon from foreign importers in Shanghai at a price of about Tls. 300 per box. For manufacturing a yard of the finer grade lace, .075 *liang* of rayon is required, for that of the second grade, 06 *liang*, while .05 *liang* is needed for a yard of No. 16 cord and .02 *liang*, for a yard of No. 24 cord.

Most silk lace factories produce silk cords as well as laces. The laces they produce are of two kinds: the broad lace is woven with 77 spindles, the narrow lace, with 17. The round cord is made with an odd number of scpindles, while the flat cord is woven with an even number.

The following table shows the different kinds of silk laces and cords produced by Shanghai and Wuhsien lace factories and the prices of each kind.

	Trade Name			Price
57	Artificial	Silklace	.....	1 cent per yard
61	„	„	.....	1 „ „ „
65	„	„	.....	„ „ „ „
73	„	„	.....	1.80 „ „ „
77	„	„	.....	„ „ „ „
81	„	„	.....	„ „ „ „
16	Round	Cord	.....	1 „ „ „
24	„	„	.....	1 „ „ „
7	oval	„	.....	50 „ „ „
9	„	„	.....	„ „ „ „
13	flat	„	.....	75 „ „ „
17	„	„	.....	2 „ „ „
25	„	„	.....	„ „ „ „

There is a large variety of artificial silk laces produced by Kiangsu factories, but the total annual output is not known. According to statistics given by the Lace Manufacturers' Union, Shanghai lace factories produce annually a quantity worth about $900,000, while the annual output of Wuhsien factories is approximately $14,000 in value.

CHAPTER LI

FURNITURE

THE CITIES of Shanghai, Kiangning, Wuhsien, Chinkiang, Nantung, and Ihsing are the centers of the furniture industry of Kiangsu Province. Originally shops engaged in making wooden furniture were known as *siao mu tso* (小木作) or "small" carpenter shops, as distinguished from the "large" carpenter shops engaged in making woodwork for building purposes. During recent years, owing to the increasing popularity among the Chinese of Western-style furniture, several large factories have been established, the most important of these being the Chun Tai (毛全泰) and Tai Chong (泰昌), both of Shanghai.

Furniture-making establishments are scattered all over the Province, and no accurate figures are available in regard to the number of factories or other essential details, but a brief description of conditions in some of the leading cities follows:—

Shanghai.—The furniture industry in this city may be divided into two groups, the "red wood" and "foreign style" group. In the first there are 24 workshops, whose capital varies from $800 to $5,000, their operations being confined to the making of Chinese-style furniture. In the second group there are 32 workshops in operation, the most important being that of Tai Chong & Company, having a capital of $300,000, and premises at 95 Yuyuen Road. Other foreign-style furniture makers of importance are Chun Tai and Company, the House Furnishing Company (水明昌), Shanghai Furniture Company (上海木器公司), Ma Teh Chi Factory (馬德記), Chen Yung Hsin Factory (陳永興), and the Studio D'Art Factory (藝林).

Nanking.—The furniture makers of this city are also divided into two groups, the "red wood" and "Ningpo style." The first is engaged exclusively in making red wood

furniture, while the second makes furniture of other and softer woods. The chief concerns in the first group are the Tang Shen Shen (唐森森), Sun Yiao Chi (孫耀記), and Chang Ping Shen (張炳森); and those in the second group are the Wei Fu Hsin (魏復興), Wei Chu Hsin (魏聚興), Wang Yung Chi (王榮記) and Yi Li Shen (義利生).

Wuhsien.—This is where the famous "Soochow style" furniture is made. The total capital invested in the industry amounts to $120,000, the number of workers being 2,050. In 1927 the total output amounted to 1,000 pieces, valued at $105,300; in 1928, 1,005 pieces, valued at $101,000, and in 1929, 950 pieces, valued at $100,300.

Wuchin.—The total capital invested in the old-style furniture industry in Wuchin is about $200,000, with an annual output of $300,000. The total number of workers employed is 1,000, of whom 850 are carpenters and 150 polishers. The factories engaged in making Western-style furniture have a total capital of $15,000, employing 70 hands, and the total output in 1927 was $7,200, in 1928, $13,000, and in 1929, $26,000. The wood used by the old-style furniture makers is chiefly from Szechwan, and varnish comes from Hunan; while the wood used by Western-style makers is imported from the United States and Japan to the annual value of $25,000.

Chinkiang.—The total capital invested in the furniture industry in this city is about $60,000, the total number of workers being over 3,000. The aggregate output during the three years ending 1929 was as follows:—

	1927	1928	1929
Red Wood	$32,000	$40,000	$3,040
Other Wood	144,000	126,000	116,000

Nantung.—The furniture industry in this city represents an aggregate capital of $8,000 only, the total number of hands employed being 200, their output being chiefly composed of desks, chairs, wash-stands, and beds, valued in 1927 at $45,000, in 1928 at $48,000, and in 1929 at $52,000.

Kiangtu.—The total capital invested in the furniture industry in this place is about $10,000, the output in 1927 and 1928 being valued at $20,000 each year, and in 1929 at $22,000.

WORKING CONDITIONS AND WAGES

The total number of workers engaged in the furniture industry in Kiangsu Province is over 10,000, of whom over 3,000 are in Shanghai. They are divided into several groups, according to their birthplace. Generally the Wenchow and Ningpo workers are engaged in making "red wood" and Western-style furniture, the Wuchin group in polishing and varnishing, and the Kiangsi group in making old-style desks and chairs.

Wages are paid according to the kind of work in which men are engaged, as shown in the following table:—

	Piece Work		Daily	Monthly	Four-Monthly
Carpenters	$18-$24	Average per month	$0.40-$0.80	$2-$12	$20-$30
Carvers	25	" " "	0.30- 0.70	4- 11	——
Sawers	12- 13	" " "	——	7- 13	——

Workers usually put in 10 hours a day, those working on night shifts during the busy season receiving extra pay, but apprentices work 15 hours a day without any renumeration, receiving only board and lodging.

SUPPLY OF WOOD

The "red wood" used in making furniture is chiefly from abroad. During 1928 the total quantity imported into Shanghai amounted to 84,519 piculs, valued at Hk. Tls. 468,116; in 1930, 79,810 piculs, valued at Hk. Tls. 465,123; and in 1931, 66,634 piculs, valued at Hk. Tls. 509,755.

The wood used by foreign-style furniture makers is chiefly composed luan, teak, pine and oak. The first comes principally from French Indo-China, and teak and oak from the Straits Settlements and South Sea Islands. The following table shows the quantity of timber imported from various countries during 1931:—

	Square Feet
Hongkong	18,509,000
Japan	14,185,000
Netherlands India	8,799,000
Russia, Pacific Ports	7,875,000
Philippine Islands	7,579,000
Singapore, & F.M.S.	4,361,000
Borneo	3,860,000
U.S.A.	2,656,000

"Red Wood" is bought from the dealers in Shanghai, the annual amount purchased being 70,000 piculs. Foreign timber is also purchased from local dealers. Current market quotations show that luan wood is sold at $120 per 1,000 square feet, teak, $600 per 1,000 square feet, and oak, Tls. 100 per 1,000 square feet.

HOME AND FOREIGN MARKETS

The "red wood" business in Shanghai is handled by two groups, the Wenchow and Wuchin groups, and in addition to local requirements, both are doing export business, the chief destination being the United States. The aggregate annual turnover for both groups amounts to over $1,000,000 but owing to the high cost of "red wood" a marked decline of business has been witnessed during recent years.

In regard to foreign-style furniture, the chief centres for local trade are Shanghai and Nanking, and only 20 per cent is sold to Chinese, the remainder going to foreigners. A considerable amount is exported to the Straits Settlements and Honolulu, and the total annual turnover amounts to $8,000,000.

CHAPTER LII

STONE POWDER

ALTHOUGH the industrial value of stone powder has been long appreciated in the West, its manufacture was not undertaken in China until quite recently. In Shanghai the industry was started some fifteen years ago, when the Saey Tai Stone Pulverizing Works (瑞泰機製石粉廠) commenced operations in Kiaochow Road with the small capital of $50,000. Eight years later Mr. Ma Chung Teh (馬崇德) organized a larger concern, the Shun Chang Stone Pulverizing Works (順昌機製石粉廠), in Brenan Road. This factory started with a capital of $100,000, and turned out white stone powder, talcum powder, and gypsum powder for making cosmetics, paint, etc. Powder from other stones has been made recently to meet the demands of porcelain, glass and rubber manufacturers.

The slow development of this industry may be seen from the fact that since 1917 no other factories have been started except the two mentioned, and large-scale production is impossible. The Saey Tai concern employs only about 20 hands, and the Shun Chang about 30.

No women are employed in this work, physical strength rather than dexterity being needed. Most of the operatives come from Wuchin, Kiangning, and Yencheng, the wages paid monthly ranging from $15 to $17.50, according to skill and the nature of the work. White stone from Huchow (湖州), and Chinkiang, talc from Liaoning and Shantung, gypsum from Hupeh and Shansi, quartz from Chekiang and Wuhsien, fluoride from Chekiang, feldspar from Kiangsi and Liaoning, magnetite from Shantung, and clay from Kiangsu, Chekiang, and Fukien are the principal materials used. But for difficulties in transportation and high local taxes, all these supplies could be had reasonably cheap.

About 95 catties of powder are obtainable from every picul of stone. White stone, talc, and gypsum are

extensively used in both factories, the annual consumption by the Shun Chang works being estimated at 20,000, 1,500 and 200 tons respectively. Current prices per ton on the Shanghai market are as follows:

White stone	$3 to $5
Talc	30 „ 40
Gypsum	45
Quartz	10 „ 18
Fluoride	18 „ 30
Feldspar	30 „ 50
Magnetite	65 „ 85
Clay	20 „ 60

White stone is a form of limestone, containing calcium carbonate. This powder, which may be dry or wet ground, is used for making glass, varnish, rubber articles, cosmetics, etc. as well as in rice-milling. Talcum powder made in Shanghai is of two kinds, "common" and "extra fine," the former weighing about from 360 to 425 grams per litre, and the latter from 315 to 350 grams This powder is used in the cosmetic, pharmaceutical, and rubber industries.

The total annual output of stone powder in Shanghai has been estimated at about 663,000 piculs, valued at approximately $480,000, as shown in the table below:

	Piculs Produced.	Price per Picul.	Approximate Total Value.
White stone powder	600,000	$0.50 to $	$300,000
Talcum powder	30,000	3.00 „ 4.00	100,000
Gypsum powder	3,000	6.00 „ 6.50	20,000
Quartz powder	10,000	1.00 „ 2.00	15,000
Clay powder	10,000	1.50 „ 0.40	20,000
Fluoride powder	10,000	2.00 „ 3.00	25,000
Total	663,000	——	480,000

The number of piculs given in the above table for the total annual output is considerably under-estimated, as it does not include feldspar and magnetite products. At its full capacity the Shun Chang Works alone can turn out 800,000 piculs, including 600,000 piculs of white stone powder, 24,000 piculs of talcum powder, 3,200 piculs of gypsum powder, 30,000 piculs of quartz, feldspar, and clay powder, and 34,000 piculs of other articles.

Stone powder is not exported from China in any quantity, a very small amount of white stone, gypsum and fluoride powder being shipped to the Straits Settlements and the United States, Shanghai is the only important market, though there is a small demand from Chekiang, Anhui, Fukien, Kuangtung, Hupeh and Hopei provinces.

CHAPTER LIII

CLAY FIGURES

THE GAILY-COLORED clay figures made in Wusih are very popular among the Chinese and are regarded as a special product of that city. The manufacturing district is centred around Huishan (惠山), a well-known hill near Wusih, where there are more than 300 workshops engaged in making clay figures, with over 40 stores selling them. A rough estimate indicates that more than 2,000 people are engaged in this industry, for nearly every member of each family in the trade takes some part in the work of manufacture.

The making of clay figures is a handicraft originally followed as a sideline by many of the peasantry, but as it brings a profitable return and is easy to learn, those once engaging in it are not anxious to return to farming unless obliged, and so it has gradually become an established occupation.

The making of these clay figures dates back to the period of East Chow (東周), about 3,000 years ago, when a warrior named Sun Ping (孫賓) wandered to Wusih and took up this occupation as a means of livelihood. The industry did not develop very much until the middle of the Tsing dynasty, when the workshops numbered about 200 and about 30 shops were engaged in selling clay figures. At that time the establishment of either a workshop or a store was restricted by (1) payment of a considerable sum of money, (2) giving the neighbours a sumptuous feast, (3) hiring a troupe of actors to give performances for two days, and (4) entering an agreement to confine inheritance of the business to sons only. These severe restrictions were nullified soon after the establishmcnt of the National Government in 1927, and as a result new workshops and stores were established in large numbers, until today the former have increased by more than 100 and the latter by 16.

The raw materials used in manufacturing these figures are clay and paint, the former being abundant almost everywhere on the hills around Wusih, and usually found about three feet beneath the ground. Clay is classified in two varieties—yellow and black, both of which sell at $9 per picul of 80 catties.

The tools necessary for making the figures consist of moulds made of gypsum, wooden rollers, bone knives, and paint-brushes. The moulds are made according to the craftsman's fancy, and therefore are different in one shop from another. The rollers are used to flatten the clay to the desired thickness. Bone-knives are used to smooth down the surface of the dolls when taken out of the moulds, which are then ready to be painted in many vivid colors.

MANUFACTURING PROCESS

The manufacturing process consists of four stages, described briefly as follows:—

(1) **Preparing Clay.**—A small quantity of water is poured over the clay, which is then beaten with wooden mallets until it becomes sticky. It is then cut into squares and rolled smooth into slabs which are put away in readiness for the next stage of manufacture.

(2) **Moulding.**—Clay figures are made in moulds, which are the most important feature of the manufacturing process. They are made of gypsum in two pieces, into which the clay is put and kneaded smoothly with the hands. The mould is then closed, and on being taken off after some time the clay figure remains.

(3) **Smoothing.**—The figures when first taken out of the moulds are very rough, and the surface requires smoothing. Skilful application of the bone-knives to the figures gives an even surface, and they are then put in the sun to dry.

(4) **Painting.**—This is the last process and calls for expert skill. When the figures have been painted they are ready for sale.

OUTPUT AND MARKET

During recent years, there has been considerable expansion in the output of this industry, and figures originally restricted to dolls now include animals and many other subjects. The following is a brief description of the various classes of figures made:—

1. Figures of Religious Nature.—These are generally images of Kuanyin (觀音, Goddess of Mercy), Amida Buddha, the ancient warrior, Kuan Yun Chang, etc. These figures are usually purchased by women from the country and Buddhists generally.

2. Pathological Models.—These are of very recent manufacture, and usually represent various parts of the human body as affected by contagious and other diseases. They are made only to order.

3. Models of an Educational Nature—These models are actually toys made for educational purposes, representing lions, elephants, dogs, cats, famous characters in ancient dramas, boy scouts, etc.

4. Models for Propaganda—These are similar to the models made for educational purposes, with the difference that they are used in various public health movements, showing large-scale models of injurious insects and vermin.

The best month for the sale of clay figures is the first moon of the Chinese calendar, for the Chinese New Year is generally observed as a season for buying toys for children. Shanghai, Chinkiang, Changchow, and many other cities in Chekiang province are all good markets for these figures, and while statistics relating to the quantity sold are lacking, the total annual value is estimated at about $50,000.

Wusih manufacturers have extended their market as far as the United States, shipments thither in 1923 being valued at more than $400 and in 1927 at about $1,500, but trade during recent years has decreased, due largely to the general economic depression all over the world.

As a rule, clay figures are sold wholesale by the workshops to the local stores, from which dealers in other localities obtain supplies.

As a result of unfavorable economic conditions generally, the sale of clay figures has greatly declined of late, and makers have cut prices with the result that their output is of very inferior quality.

CLAY FIGURE STORES

Stores in the vicinity of Huishan which are registered with the Clay Figure Guild are as follows:—

Name	Address
Hu Wan Chen (elder branch) (胡萬成大房)	Heng Chia, Shan Men Kou (山門口橫街)
Hu Wan Chen (second branch) (胡萬成二房)	" " "
Hu Wan Chen (third branch) (胡萬成三房)	" " "
Mei Chin Hua (美景華)	Lun Tou Chang (龍頭場)
Mei Chin Hua (branch office) (美景華分號)	Heng Chia, Shan Men Kou
Yu Fu Mou (elder branch) ... (裕福茂大房)	" "
Yu Fu Mou (elder branch) ...	Lun Tou Chang
Yu Fu Mou (second branch) .. (裕福茂二房)	Heng Chia, Shan Men Kou
Yu Fu Mou (second branch) ..	Ho Tan Shang (河塘上)
Chen Shun Hsing (Chen Hau) (陳順興正號)	" " "
Chen Shun Hsing (陳順興) ..	Heng Chia, Shan Men Kou
Ku Wan Chun (顧萬春)	" " "
Pao Shun Hsing (鮑順興) ...	" " "
Chen Fu Mou (陳復茂)	" " "
Chen Fu Mou (branch office) (陳復茂分號)	Shan Men Nei (山門內)
Chen Fu Mou (Hoh Chi) ..... (陳復茂宅記)	Kuan Tsien Chia (觀音街)
Yen Yung Hsing (嚴永興) ...	Heng Chia, Shan Men Kou
Tsiang Teh Mou (蔣德茂)	" " "
Liu Yuan Mou (劉元茂)	" " "
Ting Ho Hsing (丁合興)	Ho Tan Shang

Ting Ho Hsing	Heng Chia, Shan Men Kou
Ting Ho Hsing	Kuan Tsien Chia
Hui Tsin (惠津)	Ho Tan Shang
Wu Hsiah Hsing (吳洽興) ...	Lun Tou Chang
Ku Chu Shun (顧聚順)	〃 〃
Chang San I (章三益)	〃 〃
Shao I Shun (邵義順)	〃 〃
Chen Chien Chang (陳乾昌) ..	〃 〃
Tsiang Wan Shun (蔣萬順) ..	〃 〃
Kung Yuan Shen (龔源盛) ...	Tsih Chia, Shan Men Kou (山門口直街)
Chow Kun Fah (周坤發)	〃 〃 〃
Chu Yuan Mou (朱源茂)	〃 〃 〃
Kung Yuan Mou (龔源茂) ...	〃 〃 〃
Kao Yung Shen (高永盛)	Tsih Chia, Shan Men Kou
Mei Shu Kuan (萬術館)	Shan Men Nui
Chien Wan Feng (錢萬豐) ...	〃 〃
Sin Lee Chin Hua (新記景華)	〃 〃
Chang Chen Chi (章振記)	〃 〃
Chen Shu Shun (陳聚順)	〃 〃
Hsin Chin (新錦)	〃 〃
Chu Hsiang Ho (朱祥和)	Shiang Hua Chiao (香花橋)
Chu Heng Mou (朱恒茂)	〃 〃 〃
Mei Chu Ssu (美聚時)	〃 〃 〃
Sin Mei Li (新美麗)	Kuan Chien Chia
Chow I Shun (周益順)	〃 〃
Ching Yuan Chang (秦源昌)..	〃 〃

CHAPTER LIV

SHIPBUILDING

SHANGHAI being situated near the mouth of the Yangtse River has a site admirably adapted as a centre of the shipbuilding industry. As far back as 1865 the famous Li Hung Chang and Tseng Kuo Fan jointly petitioned the Government to establish the Kiangnan Arsenal at Shanghai, now known as Kiangnan Dockyard, and this venture marked the beginning of shipbuilding enterprise under State management. Similar private undertakings by individuals soon followed, and Chu Chi Yao (朱志堯) started the Chiu Hsin Shipyard (求新機器輪船造船所) but in 1917 this concern was sold to French interests. The Shen Chi (森記) and Heng Mao (恆茂) were also among the first shipyards to be established, followed by about a score of others.

Among the 25 shipyards now in Shanghai one is under State control and three are under foreign management, details of capital, organization, date of establishment, etc., being as follows:

	Organization	Capital	Established
Kiangnan Dock & Engineering Works (江南造船廠) ...	Under State Management.	——	1865
Chao Shang (招商修船廠)	Under China Merchants Steam Navigation Co., Ltd.	——	1914
Kung Mao (公茂船廠)			
Ho Hsing Eng. & Shipbuilding Works Ltd. (合興機器船廠)			
Sung Shun Chang (孫順昌造船廠)	Private Ownership	$2,000	1918
Hsieh Shun Chang (協順通運輪船廠)	Partnership	2,000	1932*
Shun Chang (順昌輪船廠)			
Hung Chang (鴻昌機器船廠)	Private Ownership	20,000	1917
San Pei (三北輪船廠)			
Ta Chung Hua (大中華機器船廠)	" "	100,000	1927
Shen Chi (森記機器船廠)	" "	2,300	1901
I Hsin (一新機器船廠)		——	——
Hsu Shun Hsin (徐順興機器輪船廠)		——	——
Wu Shun Hsin (吳順興機器輪船廠)		——	——
Chuen Chang (全昌機器船廠)		——	——
Hua Tai (華泰機器船廠)		——	——
Hung Chang Hsiang (恒昌祥機器輪船廠)	" "	68,000	1900
Nanyang (南洋機器輪船廠)	Limited Liability	40,000	1922
Heng Mao (恒茂機器船廠)	Partnership	3,000	1903
Huai Chang (匯昌機器船廠)			
Ming Chang (明銘機器船廠)	Private Ownership	3,000	1921
FOREIGN CONCERNS			
New Engineering & Shipbuilding Works, Ltd. (瑞鎔) ..	British		
Shanghai Dock & Engineering Co. Ltd. (耶松)	British	Societe Franco-Chinese de Constructions Metallequis et Mecanequis (求新)	French.

Among the Chinese enterprises the Kiangnan Dock has the largest number of workmen, with the Heng Chang Hsiang and Ta Chung Hua coming next, each having over 90 regular employees, while the Chao Shang, Nanyang, and Hung Chang also keep large working staffs. In addition to the regular full-time workers every yard has a few apprentices, and additional labor is engaged in time of need. The Heng Chang Hsiang pays the highest scale of wages, ranging from $30 to $160 per month, while the highest rate paid in the Kiangnan Dockyard is $3.30 a day. Wages paid at the Hung Chang, Nanyang, Hsieh Shun Chang, Sung Shun Chang and Shen Chi shipyards average about $60 per month, and apprentices receive pocket-money of about 60 cents a month.

The Kiangnan Dock and Engineering Works has the best equpiment, and the Nanyang, Chao Shang, Shen Chi and Hung Chang yards also have modern machine and tools, but the Hsieh Shun Chang and Sung Shun Chang, owing to their limited capital, are not so well equipped.

SOURCE OF BUILDING MATERIALS

Metals and timber are the most important items on the list of material for building ships, and steel, wrought iron, pig iron, angles, copper, brass, and lead are most in demand, while among the timber used are teak, pine, camphor, and other hardwoods. The following details show the source of many materials and approximate prices:—

	Source of Supply.	Unit.	Price.
Electrical materials	Great Britain, Germany		
Steel	U.S.A. Germany, Great Britain	Ton	Tls. 100
Steel plates	Great Britain, Germany	Picul	„ 6.50
Wrought iron	Great Britain, U.S.A., Belgium	Ton	„ 100
Pig iron	Domestic, Great Britain, India	Ton	„ 75
Copper	U. S. A.	Ton	„ 300
Brass	Great Britain, U.S.A.	Ton	„ 200
Lead		Pound	$ 0.50-$1.00
Teak	Siam	Sup. ft.	Tls. 0.30
Pine	U. S. A.	„ „	„ 0.07
Camphorwood	Domestic	„ „	„ 0.03
Nails		Barrels	„ 15.00
Screws		Package	$ 0.80

The material used by Kiangsu shipbuilders amounts to about $8,500,000 annually.

BUILDING AND REPAIRS

The new tonnage built annually is estimated at over $10,000,000 and repair work at $335,000,000. The Ta Chung Hua handles the largest share of this business, and in 1930 built about a score of ships, worth $1,000,000. Next came the Hung Chang and Ming Chang, the former handling $140,000 worth of business in 1931, and the latter turning out 10 Diesel engines annually, valued at $20,000. The other yards are mostly engaged in repairing and building sail craft. The following table shows the amount of business handled by the ten principal factories in 1929, 1930, and 1931:—

	Building Output						Value of Repair Work		
	1929		1930		1931		Market	1929	1930	1931
Heng Chang Hsiang	—		—		—		—	$ 160,000	$ 170,000	—
Shen Chi	—		Steamers	$ 180,000	—		Shanghai	70,000	120,000	$ 200,000
Sung Shun Chang	Hull	$ 9,500	Hull	14,000	Hull	$ 16,000	"	5,600	7,000	8,000
Heng Mao	Engines	5,000		7,000		8,000	"	2,500	2,800	3,000
Hung Chang	—		—		Steamer	140,000	"	30,000	30,000	30,000
Hsieh Shun Chang	Hull	2,500		3,000		8,000	"	2,000	2,500	5,00
Kiangnan Dock & Engineering Works	—		—			4,232,012	Home ports	—	—	—
Ta Chung Hua	—		—			1,000,000	Various provinces	—	—	—
Ming Chang	—		—		Engines	20,000	" "	—	—	—
Nanyang	—		—			20,000	—	—	—	—

CHAPTER LV

POWER PLANTS

KIANGSU ranks first among the Chinese provinces in the number of power plants installed as well as in the matter of capacity. The first movement in the direction of the establishment of electricity supply activities was started in Shanghai in the year 1883, when the Shanghai Electric Company was floated. In 1893, however, the Company was sold to the Shanghai Municipal Council, under which an extension was soon made, electricity being supplied for the first time for cooking and heating in addition to illuminating purposes. The undertaking remained in the hands of the Council until August, 1929, when the American Foreign Power Co. effected the purchase of the entire plant under the name of the Shanghai Power Company. The first Chinese electrical undertaking was the Chinese Electric Power Company (上海華商電氣公司), which is a joint concern promoted by the Electric Light Company and the Electric Street Car Company, and had a very humble beginning. In 1904 the company installed a small generating unit, and this was the first time the public in Nantao (南市), Shanghai, had an opportunity for using electric light. In 1909 the company started an Electric Street Car Company, and in 1921 it was the opinion of shareholders of both companies that a combine be made in order to reduce expenses. On this reorganisation being effected, the two concerns were combined under the name of Chinese Electric Power Company.

Many power plants were installed subsequently. In Chinkiang the Ta Chao Electric Company (大照電燈公司), located at Ho Hua Tang (荷花塘), was organized in 1905 with a capital of 100,000 taels, and in 1908 another sum of Tls. 100,000 was added. The present capital amounts to over $700,000, and the generating capacity to

3,070 K. W. No sooner had this plant been installed, the Chapei Electric and Water Works (閘北水電公司) made its first appearance at Cha Tai Chueh (叉袋角), Chapei, Shanghai. The undertaking was started in 1908, but was not formally inaugurated until 1912, when a loan of over 300,000 taels was raised from Japanese merchants. Another loan of about 100,000 taels was raised the following year. In 1914 the Company reverted to Provincial Government control in the hope of improving general conditions, but in 1924 again came under private management with a capital of over 2,000,000 taels. A further extension was brought about the following year, and at present, the capital of the company has increased to $4,000,000.

The first power plant under Government control was the Metropolitan Electric Plant (首都电廠), Nanking. The concern, formerly known as the Kinling Electric Lighting Company (金陵電燈官廠), was established in 1909, when the sum of 200,000 taels was set aside by the Government for the purpose, but did not come into actual operation until 1911. The company has its premises east of the Tientsin Bridge. (天津橋), outside the Hsihua Gate (西華門). The business of the company was at its inception very limited, as the use of electricity was not widely appreciated. In 1912 the name of the Company was changed to the Nanking Electric Company, Kiangsu Province (江蘇省立南京電燈廠), and in 1918 a substation was established at Hsiakuan (下關). In April, 1928 the National Reconstruction Commission took over the plant, and drafted a general scheme for its improvement.

Another concern which the National Reconstruction Commission took over in 1928 was the Chishuyen Electric Plant (戚墅堰電廠), formerly known as the Cheng Hua Electrical Supply Manufacturing Company (震華電機製造公司), established in 1923. The Commission is very keen in carrying out general improvements in the work it has undertaken.

With the development of industry and commerce and the increase of population in every city of the Province, the use of electricity has become more and more urgent.

During the years from 1916 to 1921 the number of new plants established in various districts amounted to no less than 40, and at present, only 12 of the 61 cities in Kiangsu are not illuminated by electric light, namely, Chuyung, Yangchung, Ssuyang, Suchien, Suining, Hsiaohsien, Tangshan, Peihsien, Peihsien, Shuyang, Kangyu and Lienshui.

PRESENT CONDITIONS

There are at present altogether 133 electrical undertakings installed in the Province. While Wuhsien ranks first among the cities in the number of plants established, Shanghai takes the lead in point of capacity. The following table, compiled in October, 1932, shows the number of plants, generators and the total capacity possessed by each of the 49 cities where electric light has been used:

	No. of Plants	No. of Generators	Total Capacity (K. W.)
Nanhui	4	4	140.00
Sungkiang	6	7	375.50
Shanghai	6	13	28,621.50
Chinshan	5	5	95.60
Fenghsien	4	4	75.00
Chuansha	2	2	36.00
Tsingpu	2	3	110.00
Wukiang	7	7	189.00
Wuhsien	12	14	8,298.00
Kunshan	1	3	75.00
Kiating	4	5	330.00
Paoshan	3	3	535.00
Tsungming	2	2	114.00
Taitsang	4	6	159.00
Changshu	4	10	348.00
Wusih	6	7	340.00
Kiangyin	2	4	170.00
Wuchin	3	5	4,720.00
Ihsing	6	6	317.00
Liyang	2	2	224.00
Kaoshun	2	2	32.00
Lishui	1	1	15.00
Nanking & Kiangning	3	14	3,023.00
Kiangpu	1	3	1,550.00
Luho	1	1	40.00
Icheng	1	1	50.00
Chinkiang	1	5	3,070.00
Chintan	1	1	100.00

Tanyang	2	3	95.00
Taihsing	3	3	127.00
Kiangtu	4	5	1,570.00
Kaoyu	2	2	70.00
Paoying	1	1	50.00
Huaian	1	1	62.50
Huaiyin	1	1	40.00
Tungshan	1	2	575.00
Fenghsien	1	1	20.00
Tunghai	1	2	75.00
Kuanyun	1	2	95.90
Founing	1	1	18.00
Yencheng	1	1	85.00
Hsinghua	1	1	50.00
Tungtai	3	4	125.00
Taihsien	4	4	210.00
Jukao	4	5	206.00
Tsingkiang	1	1	32.00
Nantung	2	5	340.00
Haimen	1	1	100.00
Chitung	1	1	5.00
Total	133	187	57,400.10

Of the 133 plants, the capital of 10 is not definitely known, that of the remainder totalling $24,152,950. The Chapei Electric and Water Works and the Chinese Electric Power Company, each capitalized at $4,000,000 are the largest undertakings of the Province, while the Yang Chia Chi Electric Co. (楊家集電燈公司), Kuanyun, having a capital of $1,000, is the smallest. The capital of an average concern ranges from $10,000 to $50,000, as shown below:

Capital	No. of Plants
$ 1,000– $ 5,000	21
5,001– 10,000	22
10,001– 50,000	50
50,001– 100,000	14
100,001– 500,000	11
500,001– 1,000,000	3
1,000,000 and over	5

Another interesting fact is that despite the fact that Kiangsu ranks first among Chinese provinces in electric industry, the total capacity of 57,400.10 kilowatts the

Province has at present is not half so large as that possessed by the Shanghai Power Company. Therefore, there is much room for development and expansion in this field.

SOURCES OF FUEL

Liquid fuel is obtained from the Texas Co., the Standard Oil Company of New York or the Asiatic Petroleum Co. The total annual consumption by the Province amounts approximately to 3,408 tons, prices ranging between $75.60 to $90 per ton.

Coal comes from Annam, Shansi, Northern Kiangsu, Shantung, Chinwangtao, etc. The present price of bituminous coal is about $18 per ton, while that of anthracite, $30. The Province consumes approximately 66,482 tons of coal every year.

Coal dust is another important fuel used in electric plants, the total annual consumption by the Province amounting to about 48,522 tons. The average price per ton is approximately $16.

OTHER DETAILS

According to a recent investigation, the total sales of electricity for all purposes in Kiangsu Province were approximately 72,553,600 kilowatt hours a year. Calculated at 20 dollar cents per kilowatt hour, the aggregate income to the 133 plants in the Province could not be less than $14,510,720.

Only eight plants supply electricity for lighting, power and heating purposes. The remainder supply only electric light with the exception of 22, which also furnish power. The charge for lighting varies from 13.8 to 30 cents per kilowatt hour. Small plants, however, usually charge according to the number of lamps installed. The running charge for power consumption ranges from 4.6 to 7 cents per kilowatt hour—the distinction arises from the difference in the amount of power consumed, large consumers being charged lower rate.

The following is a list of electric plants in the Province:

	Location	Owned by	Supplying	Capital	No. of Generators	Power	Current	K. W.
Metropolitan Ele. Plant (首都電廠)	Nanking	Recons-truction Com.	Light, power & heat	$3,600,000	11	Gas & liquid fuel	Alternate	1,250
Hsia Kuan Branch, Metro. Ele. Plant (首都電廠下關分廠)	〃	〃	〃	174,570	2	Steam	〃	1,750
Sin Ming Ele. Co. (新民電燈公司)	Kiangning	Private	Light	14,400	1	Liquid fuel	Direct	23
Chishuyen Ele. Plant (戚墅堰電廠)	Wuchin	Recons-truction Com.	Light, power & heat	2,500,000	3	Steam	Alternate	3,200
Wuchin Ele. Plant (武進電氣廠)	〃	Private	Light & power	600,000	1	〃	〃	1,500
Pu Ming Ele. Co. (溥明電燈公司)	〃	〃	Light	8,000	1	Liquid fuel	Direct	20
Chinese Ele. Power Co. (上海華商電氣公司)	Shanghai	〃	Light, power & heat	4,000,000	3	Steam	Alternate	16,000
Chapei Ele. & Water Works (閘北水電公司)	〃	〃	〃	4,000,000	3	〃	〃	11,444
Pootung Ele. Co. (浦東電氣公司)	〃	〃	〃	500,000	1	〃	〃	600
Hsiang Hua Ele. Co. (翔華電氣公司)	〃	〃	〃	250,000	4	〃	〃	460

Chenju Ele. Co. (滬菇電氣公司)	Shanghai	Private	Light & power	27,700	1	Steam	Alternate	80
Min Hong Chen Shih Ele. Co. (閔行鎮市電燈公司)	〃	〃	〃	30,000	1	〃	〃	87.50
Kaochiaochen Ele. Co. (高橋鎮電燈公司)	Paoshan	〃	Light	200,000	1	〃	〃	460
Lotien Hsing Chi Ele. Co. (羅店鑫記電燈公司)	〃	〃	〃	13,000	1	〃	Direct	45
Ta Yao Yu Chi Ele. Co. (大繞餘記電燈公司)	〃	〃	〃	25,000	1	〃	〃	30
Ta Chao Ele. Co. (大照電燈公司)	Chinkiang	〃	Light, power & heat	700,000	5	〃	Alternate	3,070
Chen Heng Ele. Co. (振亨電燈公司)	Liyang	〃	Light	85,000	1	〃	〃	160
Chi Hsin Ele. Co. (啓新電燈公司)	〃	〃	〃	——	1	〃	〃	64
Hua Hua Ele. Co. (樺樺電燈公司)	Wusih	〃	〃	50,000	1	Gas	〃	100
Kai Yuan Ele. Co. (開原電燈公司)	〃	〃	〃	30,000	1	Steam	〃	80
Hsing Yeh Ele. Co. (興業電燈公司)	Yencheng	〃	〃	50,000	1	〃	〃	85
Tung Yao Ele. Co. (東耀電燈公司)	Tungtai	〃	〃	70,000	2	Liquid fuel	〃	90

Chintung Ele. Co. (濟憧電燈公司)	Tungtai	Private	Light	10,000	1	Liquid fuel	Direct	15
I Feng Ele. Co. (益豐電燈公司)	〃	〃	〃	15,000	1	〃	〃	20
Yao Ju Ele. Co. (耀如電燈公司)	Jukao	〃	〃	100,000	2	〃	Alternate	125
Ma Tang Ele. Co. (馬塘電氣公司)	〃	〃	〃	——	1	〃	Direct	20
Yao Pin Ele. Co. (耀濱電氣公司)	〃	〃	〃	80,000	1	〃	〃	45
Chen Pu Ele. Co. (振浦電燈公司)	〃	〃	〃	15,000	1	〃	〃	16
Chi Hsing Ele. Co. (積星電燈公司)	Tsingkiang	〃	〃	10,000	1	〃	〃	32
Tung Yang Ele. Co. (東暘電燈公司)	Taihsing	〃	〃	80,000	1	〃	〃	32
Yao Huang Ele. Co. (耀黃電燈公司)	〃	〃	〃	40,000	1	〃	Alternate	73
Hsu Ming Ele. Co. (煦明電氣公司)	〃	〃	〃	10,000	1	〃	Direct	22
Tung Ming Ele. Co. (通明電氣公司)	Nantung	〃	Light, power & heat	168,000	4	〃	Alternate	300
Chin Hsing Ele. Co. (金星電燈公司)	〃	〃	Light	18,000	1	〃	〃	40

Chiu Ming Ele. Co. (久明電燈公司)	Chitung	Private	Light	10,000	1	Liquid fuel	Direct	5
Tsungming Ele. Co. (崇明電氣公司)	Tsungming	〃	〃	60,000	1	〃	Alternate	64
Tung Ming Ele. Co. (東明電氣公司)	〃	〃	〃	20,000	1	〃	Direct	50
Ta Hsin Ele. Co. (大新電燈公司)	Icheng	〃	〃	60,000	1	steam	〃	50
Chen Yang Ele. Co. (振揚電燈公司)	Kiangtu	〃	〃	320,000	2	Steam & gas	Alternate	1,500
Chang Wan Ele. Co. (張萬電燈公司)	〃	〃	〃	30,000	1	Liquid fuel	Direct	26
Kuang Hua Ele. Co. (光華電燈公司)	〃	〃	〃	30,000	1	〃	〃	30
Ching Ming Ele. Co. (競明電燈公司)	Wusih	〃	〃	5,000	1	〃	〃	10
Kuang Chin Ele. Co. (廣勤電燈公司)	〃	〃	〃	18,000	1	Steam	〃	25
Ta Ming Ele. Co. (大明電燈公司)	〃	〃	〃	300,000	2	〃	Alternate	100
Loshê Ele. Co. (洛社電燈公司)	〃	〃	〃	——	1	〃	Direct	25
Yao Lou Ele. Co. (耀婁電氣公司)	Taitsang	〃	〃	50,000	2	Liquid fuel	〃	

Yao Ming Ele. Co. (耀明電燈公司)	Taihsing	Private	Light	4,000	1	Liquid fuel	Direct	15
Sha Chi Ele. Co. (沙溪電燈公司)	〃	〃	〃	22,500	2	〃	〃	22
Yu Hua Ele. Co. (友華電燈公司)	〃	〃	〃	10,000	1	〃	〃	22
I Li Ele. Co. (義利電燈公司)	Chintan	〃	〃	40,000	1	Gas	Alternate	100
Yao I Ele. Co. (耀宜電燈公司)	Ihsing	〃	〃	80,000	1	〃	Direct	68
Ho Chiao Yao I Plant No. 2 (和橋耀宜第二廠)	〃	〃	〃	——	1	Liquid fuel	〃	68
Hsu She Yao I Plant No. 3 (徐舍耀宜第三廠)	〃	〃	〃	——	1	〃	〃	68
Yang Hsiang Yao I Plant No. 4 (楊巷耀宜第四廠)	〃	〃	〃	——	1	〃	〃	68
Changchu Ele. Co. (張渚電燈廠)	〃	〃	〃	26,000	1	〃	〃	20
Shu Shan Chen Hsing Ele. Co. (蜀山振興電燈公司)	〃	〃	〃	20,000	1	〃	〃	25

Ta Chuan Ele. Co. (大川電燈公司)	Chuansha	Private	Light	20,000	1	Liquid fuel	Direct	20
Chuanpei Ele. Co. (川北電燈公司)	〃	〃	〃	6,000	1	〃	〃	16
Changshu Ele. Co. (常熟電燈公司)	Changshu	〃	Light & power	200,000	7	Gas & liquid fuel	Alternate	804
Chang Ming Ele. Co. (昌明公司)	〃	〃	〃	6,000	1	Liquid fuel	Direct	20
Hsieh Feng Ele. Co. (協豐機器腳坊電燈廠)	〃	〃	〃	3,000	1	〃	〃	4
Yao Pu Ele. Co. (靖浦電燈公司)	〃	〃	Light	2,000	1	〃	〃	20
Fu Hsing Ele. Co. (復興電燈公司)	Wukiang	〃	〃	35,000	1	〃	〃	32
Kung Hsing Ele. Co. (公興電燈廠)	〃	〃	〃	12,000	1	〃	〃	17
Hsing Yeh Ele. Co. (興業電燈廠)	〃	〃	〃	40,000	1	〃	〃	80
Ta Pu Ele. Co. (大埔碾米電燈廠)	〃	〃	Light & power	6,000	1	〃	〃	15
Hsing Ming Ele. Co. (星明碾米電燈廠)	〃	〃	〃	3,000	1	〃	〃	10
Chen Hu Ele. Co. (振湖電燈公司)	〃	〃	Light	2,000	1	〃	〃	15

Ming Hsing Ele. Co. (明星電氣公司)	Wukiang	Private	Light	8,000	1	Liquid fuel	Direct	20
Sungkiang Ele. Co. (淞江電氣公司)	Sungkiang	"	"	120,000	2	"	Alternate	268
Hengli Ele. Co. (恒利電氣公司)	"	"	"	4,000	1	"	Direct	16
Li Sheng Ele. Co. (利生電燈電氣廠)	"	"	Light & power	7,000	1	"	"	11
Chingchi Ele. Co. (澄溪電氣公司)	"	"	Light	15,000	1	"	"	37.50
Feng Sheng Ele. Co. (豐盛電氣碾米廠)	"	"	"	4,000	1	"	"	10
Mao Hsing Chang Ele. Co. (茂興廠電燈廠)	"	"	"	5,000	1	"	"	15
Chang Ming Ele. Co. (章明電燈公司)	Tsingpu	"	"	50,000	1	"	"	15
Chupu Ele. Co. (珠浦電燈公司)	"	"	"	80,000	2	Gas & liquid fuel	Alternate	95
Chuching Ele. Co. (朱涇電燈公司)	Chinshan	"	"	20,000	1	Liquid fuel	Direct	15
Chen Hsing Ele. Co. (振興電燈廠)	"	"	"	——	1	"	"	86
Hsin Fu Ele. Co. (信孚電燈廠)	"	"	Light & power	2,000	1	"	"	8

Ming Hua Ele. Co. (名華電燈廠)	Chinshan	Private	Light	2,000	1	Liquid fuel	Direct	16.7
Sung Yin Ele. Co. (松隱電燈公司)	〃	〃	〃	3,000	1	〃	〃	20
Ming Hsing Ele. Co. (明星電燈廠)	Kiangpu	〃	〃	18,000	1	〃	〃	18
Li Heng Ele. Co. (立亨電燈公司)	Fenghsien	〃	〃	25,000	1	〃	〃	25
Cheng Heng Chang Ele. Co. (程恆昌電燈廠)	〃	〃	Light & power	30,000	1	〃	〃	19
Ho Hsing Ele. Co. (合興電燈廠)	〃	〃	Light	4,500	1	〃	〃	14
Chen Ta Ele. Co. (振大碾米電燈廠)	〃	〃	〃	1,780	1	〃	〃	13
Soochow Ele. Co. (蘇州電氣廠)	Wuhsien	〃	Light, power & heat	2,400,000	3	Steam	Alternate	8,150
Waungting Branch Plant, Soochow Ele. Co. (望亭分廠)	〃	〃	Light & power	9,000	1			
Chinshih Branch Plant, Soochow Ele. Co. (金墅分廠)	〃	〃	〃	5,000	1			
Tungchiao Branch Plant, Soochow Ele. Co. (東橋分廠)	〃	〃	〃	5,000	1			

Huangtai Branch Plant, Soochow Ele. Co. (黃埭分廠)	Wuhsien	Private	Light & power	15,000	1			
Yao Chin Ele. Co. (耀錦電氣公司)	〃	〃	Light	6,000	1	Liquid fuel	Direct	20
Ming Hsing Elè. Co. (明星電燈碾米公司)	〃	〃	〃	3,000	1	〃	〃	25
Hsin Ming Ele. Co. (新明電氣公司)	〃	〃	〃	20,000	1	〃	〃	46
Jung Hsing Ele. Co. (榮興公司)	〃	〃	Light & power	7,000	1	〃	〃	15
Heng Chi Ele. Co. (橫溪電燈公司)	〃	〃	Light	2,000	1	〃	〃	12
Kuang Hua Ele. Co. (光華電氣廠)	〃	〃	〃	7,000	1	〃	〃	15
Tungshan Ele. Co. (東山電力電燈碾米廠)	〃	〃	Light & power	8,000	1	〃	〃	15
Muchi Kai Ming Ele. Co. (慕記開明電燈廠)	Lishui	〃	Light	——	1	〃	〃	15
Hsin Hua Cheng Chi Ele. Co. (新華承記電燈廠)	Kaoshun	〃	〃	8,000	1	〃	〃	12

San Yang Shun Chi Ele. Co. (三陽順記電燈廠)	Kaoshun	Private	Light	4,000	1	Liquid fuel	Direct	10
Hua Hsing Yung Ele. Co. (華興永電燈廠)	Kiating	„	„	42,000	1	„	Alternate	200
Hsing Chung Hua Ele. Co. (新中華電氣公司)	„	„	„	25,000	1	„	„	80
Huangtu Ele. Co. (黃渡電燈公司)	„	„	„	5,000	2	Steam	Direct	18
Nanhsiang Ele. Co. (南翔電燈公司)	„	„	„	70,000	2	„	Alternate	100
Nansha Ele. Co. (南沙電燈公司)	Nanhui	„	„	15,000	1	Liquid fuel	Direct	40
Ta Ming Ele. Co. (大明電燈公司)	„	„	„	30,000	1	„	„	60
Chang Hua Ele. Co. (昌華電氣公司)	„	„	„	2,000	1	„	„	20
Yao Chang Ele. Co. (耀記電燈公司)	„	„	„	12,000	1	„	„	20
Chao Ming Ele. Co. (肇明電燈公司)	Tangyang	„	„	40,000	2	„	Alternate	75
Yung Ming Ele. Co. (永明電燈公司)	„	„	„	——	1	„	Direct	20
Tai Chi Ele. Co. (泰記公司電燈廠)	Kunshan	„	Light & power	80,000	3	„	Alternate	75

Hua Ming Ele. Co. (華明電燈公司)	Kiangyin	Private	Light & power	97,500	3	Steam & liquid fuel	Alternate	150
Ching Yang Ele. Co. (青陽電燈公司)	〃	〃	Light	7,000	1	Liquid fuel	Direct	20
Hsin Hsin Ele. Co. (興興電燈會司)	Hsinghua	〃	〃	50,000	1	Steam	Alternate	50
Pao Ming Ele. Co. (寶明電燈公司)	Paoyin	〃	〃	50,000	1	〃	Direct	50
Kaoyu Ele. Co. (高郵電燈公司)	Kaoyu	〃	〃	50,000	1	Liquid fuel	〃	50
Ta Hsin Ele. Co. (大新電氣公司)	〃	〃	〃	40,000	1	〃	〃	20
Chen Tai Ele. Co. (振泰電燈公司)	Taihsien	〃	〃	125,000	1	Gas	Alternate	100
Hsien Ming Ele. Co. (咸明電燈公司)	〃	〃	〃	25,000	1	Liquid fuel	Direct	20
Chiang Hua Ele. Co. (姜華電燈公司)	〃	〃	〃	30,000	1	〃	〃	50
Hai An Shih Ele. Co. (海安市電氣公司)	〃	〃	〃	25,000	1	Steam	Alternate	40
Yao Tang Ele. Co. (耀棠電燈公司)	Luho	〃	〃	20,000	1		Direct	40

Huai Tung Ele. Co. (淮東電公司)	Founing	Private	Light	9,000	1	Liquid fuel	Direct	18
Ta Ming Ele. Co. (大明電燈公司)	Kiangtu	"	"	10,000	1	"	"	14
Li Huai Ele. Co. (利淮電燈公司)	Huaiyin	"	"	100,000	1	Steam	Alternate	40
Hsin Hua Ele. Co. (新華電燈公司)	Huaian	"	"	100,000	1	"	"	62.5
Hai Ming Ele. Co. (海明電燈公司)	Haimen	"	Light & power	60,000	1	Liquid fuel	"	100
Hsin Tung Ele. Co. (新東電燈公司)	Tunghai	"	Light	75,000	2	"	"	75
Kuanyun Ele. Co. (灌雲電燈公司)	Kuanyun	"	"	50,000	1	"	"	75
Yangchiachi Ele. Co. (楊家集電燈公司)	"	"	"	1,000	1	"	Direct	20
Yao Hua Ele. Co. (耀華電氣公司)	Tungshan	Kiangsu Provincial Government	Light & power	300,000	2	Steam	Alternate	575
Fenghsien Ele. Co. (豐縣電燈公司)	Fenghsien	Private	Light	——	1	"	Direct	20
Pukow Ele. Co. (浦口電氣公司)	Kiangpu	Tientsin-Pukow Railway	Light & power	900,000	3	"	Alternate	1,550

In addition to the Chinese owned plants, there are two foreign electrical undertakings operated in Shanghai, namely, the Shanghai Power Co. and the Compagnie Francaise de Tramways et d'Eclairage Electriques de Shanghai. The former was the first electric plant established in Shanghai, known at the beginning as the Shanghai Electric Company. In 1893, the concern reverted to the hands of the Shanghai Municipal Council. The installed capacity in 1901, as estimated, was 550 K.W., which was then increased to 5,600 K.W. In 1928 the total capitalization of the plant was 50,000,000 taels, with installed capacity of over 121,000 K.W. In August, 1929, the Municipal plant passed back into the hands of private capital, when the American and Foreign Power Company, Inc. of New York City, completed their purchase of the Electricity Department for the sum of Taels 81,000,000. The new company is now operated under the name of the Shanghai Power Company with a capital of $112,500,900, the installed capacity amounting to 161,000 kilowatts.

The Compagnie Francaise de Tramways et d'Eclairage Electriques de Shanghai is a French enterprise, organized in 1906, with a view to supplying electricity for all purposes used in the French Concession. The company now possesses a capital of $10,000,000 and a total installed capacity of 12,500 kilowatts.

It must also be mentioned that apart from the regular electric companies listed above, there is also a large number of mills which install electric generators for private use, particulars being tabulated below:

	Location	Owned by	Power	Capacity
Nanking Mint	Nanking	Ministry of Finance	Steam	150
Kiangnan Dock & Engineering Works	Shanghai	Ministry of Navy	"	69
N.S.R. Machine Shops	Shanghai, Changhuapang, Wuhsien, Kunshan, Wusih, Wuchin Lungtan, Tanyang and Nanking	Ministry of Railways	"	392
Shun Hsin Cotton Mill, No. 5 (申新第五紗廠)	Shanghai	Private	"	1,010
Heng Feng Cotton Mill (恒豐紗廠)	"	"	"	2,198
Hung Chang Cotton Mill (鴻章紡織廠)	"	"	"	850
San Hsin Cotton Mill (三新紗廠)	"	"	"	1,270

Wing On Cotton Mill, No. 1 and No. 2	Shanghai	Private	Steam	2,800
(永安第一二紗廠)	„	„	„	1,600
Hung Yu Cotton Mill (鴻裕紗廠)	„	„	„	1,650
Pu I Cotton Mill, No. and No. 2 (溥益第一二紗廠)	„	„	„	2,789
Hou Sheng Cotton Mill (厚生紗廠)	„	„	„	600
Wei Tung Cotton Mill (緯通紗廠)	„	„	„	2,000
Tung I Cotton Mill (統益紗廠)	„	„	„	700
Heng Ta Cotton Mill (恒大紗廠)	„	„	„	120
Cheng Hua Cotton Mill (振華紗廠)	„	„	„	1,345
Ta Feng Cotton Mill (大豐紗廠)	„	„	„	867
Chen Tai Cotton Mill (振泰紗廠)	„	„	„	1,000
Hua Feng Cotton Mill (華豐紗廠)	Nantung	„	„	750
Ta Sheng Cotton Mill (大生紗廠)	Tsungming	„	Liquid fuel	75
Ta Tung Cotton Mill (大通紗廠)				
Chiu An Cotton Mill (久安紗廠)	Nantung	„	——	400
Chen Hsin Cotton Mill (振新紗廠)	Wusih	„	Steam	900
Chin Feng Cotton Mill (慶豐紗廠)	„	„	„	750
Shun Hsin Cotton Mill, No. 3 (申新第三紗廠)	„	„	„	3,200
Shun Hsin Cotton Mill, No. 6 (申新第六紗廠)	Wuchin	„	„	1,300

CHAPTER LVI

WATERWORKS

THERE are at present five waterworks in operation in Kiangsu, the Shanghai Waterworks, the Shanghai Inland Waterworks, the Compagnie Francaise de Tramways et d'Eclairage Electriques de Shanghai, the Chinkiang Waterworks, and the Chapei Water and Electricity Works, the first named being the oldest and organized with British capital in 1882. The other plants are all Chinese owned with the exception of the Compagnie Francaise de Tramways et d'Eclairage Electriques de Shanghai, which is a French enterprise. The Chinkiang Waterworks was originally a British undertaking, but later reverted to Chinese control as a result of the retrocession of the British Settlement in that city. The table below shows particulars:

	Location.	Capital.	Estab. lished.	No. of Em- ployees.	No. of Houses Supplied
Shanghai Inland Waterworks	Shanghai	$4,955,933	1900	46	17,218
Chapei Water and Electricity Works	"	5,000,000	1910	35	3,898
Chinkiang Waterworks	Chinkiang	100,000	1926	20	1,234
Compagnie Francaise de Tramways et d'Eclairage Electriques de Shanghai	Shanghai	75,000,000 francs	1907	530	5,200
Shanghai Waterworks	"	£1,146,000	1882	408	—

The water supplied by the plants in Shanghai comes from the Whangpoo River, while the Chinkiang Waterworks draws water from the Yangtse. The rapid increase of population in Nantou (南市) and Chapei (閘北), both Chinese administered districts in Shanghai, during recent years has necessitated the extension of the Shanghai Inland Waterworks and the Chapei Water and Electricity Works. The following table shows the amount of water supplied by these two plants from 1927 to 1930:

	SHANGHAI INLAND WATER WORKS	CHAPEI WATER AND ELECTRICITY WORKS
	Daily Capacity (cubic metres)	Daily Capacity (cubic metres)
1927	56,800	20,500
1928	56,800	54,500
1929	56,800	54,500
1930	71,500	54,500

	Average Daily Supply (cubic metres)	Average Daily Supply (cubic metres)
1927	46,500	18,700
1928	47,500	22,100
1929	48,100	27,200
1930	47,940	34,780
1931	55,195	38,190

	Highest Daily Supply (cubic metres)	Highest Daily Supply (cubic metres)
1927	68,000	22,400
1928	58,800	31,100
1929	63,100	34,400
1930	60,340	45,770

	Lowest Daily Supply (cubic metres)	Lowest Daily Supply (cubic metres)
1927	32,200	9,770
1928	40,000	12,200
1929	34,600	21,900
1930	32,290	18,930

The four plants in Shanghai have their respective areas of operation, thus, the Shanghai Waterworks supplies water used in the International Settlement, the Compagnie Francaise de Tramways et d'Eclairage Electriques de Shanghai, in the French Concession, the Shanghai Inland Waterworks, in Nantou and Lunghua (龍華), and the Chapei Water and Electricity Works, in Chapei, Kiangwan (江灣), Woosung, Yinghsiang (引翔), etc. In areas enclosed by extra-settlement roads and in regions around the border of the Settlement and the Chinese administered territory, water was formerly furnished by the two foreign

concerns, but as a result of a negotiation between the Bureau of Public Utilities of the Municipality of Greater Shanghai and the Settlement authorities in 1929, the latter relinquished the right of suplying water in those districts in favour of Chinese plants. In places where the supply from Chinese companies is insufficient, the foreign concerns are restored to by a special arrangement between them.

Although the suply of water by the Chinkiang Waterworks is now limited to the former Settlement area, an extension plan is being carried out by the Provincial Reconstruction Department.

WORKS UNDER CONSTRUCTION

Nanking Waterworks—One of the gigantic problems facing residents in Nanking is soon to be solved by the completion of the huge Nanking Waterworks. Plans were drawn up by a specially appointed committee attached to the Municipality of Nanking in 1929. The total of $2,000,000 in bonds known as the "Special Reconstruction Bonds" was issued by the City Government of Nanking to serve as the necessary funds in this connection. The first stage of construction, including the building of the power house, water pumping station and the reservoir, was completed in 1932. Activities are now in full swing in connection with the construction of the foundation work for balancing the reservoir on the Ching Liang Hill.(清涼山), the coagulation basin with aer-o-mix and propeller mixers and the sinking of intake pipe and rack chamber and C.I. Pipes purchased from France. It is estimated a sum of $3,000,000 more will be needed to carry the program to a "finis." With a view to economy, the special committee originally appointed to take charge of the construction of the Waterworks was dismissed in April, 1932 and its task transferred to the Public Works Bureau of the Municipality of Nanking.

Pootung Waterworks—Pootung, separated from Shanghai by the Whangpoo River, including such village-towns as Kao Chiao (高橋), Kao Hong (高行), Lu Hong (陸行), Yang Ching (洋涇), Tang Chiao (塘橋), and Yang Ssu (楊思), is a district with a very promising future. With a view to supplying clean water to the ever increasing population in this area, plans for the construction of a waterworks were made by the Bureau of Public Utilities and approved by the Municipality of Greater Shanghai in 1930. The sum of $273,470 was appropriated from the municipal treasury as the construction fund, and land near Lanneedoo (爛泥渡) in Yang Ching was chosen as the site for the new plant. Work, however, was halted following the outbreak of the Sino-Japanese conflict in Shanghai.

BOOK NINE

FINANCIAL INSTITUTIONS

CHAPTER I

MODERN BANKS

THE FIRST "modern bank to be established in Kiangsu Province was the Chartered Bank of India, Australia & China, which opened a branch in Shanghai in 1857, followed by the Hongkong & Shanghai Banking Corporation, the Banque de l'Indo-Chine, the Yokohama Specie Bank, and the Deutche-Asiatische Bank, all of which opened branches in Shanghai as the foreign trade of the port developed.

In 1897 the National Commercial Bank started business in Shanghai, founded by Sheng Hsuan Huai, and the first Chinese bank to be organised on western lines. Capital was provided by an appropriation of Tls. 1,000,000 from the Board of Finance, but the bank was subsequently reorganised as a purely private and unofficial enterprise. Another offieial concern, the Hu Pu Bank (戶部) was organised in the early part of the 19th century, and later changed its name to the Ta Ching Bank (大清銀行), with another change with the establishment of the Chinese Republic to the Bank of China. Another Government bank, the Bank of Communications, was opened in the same year by the Yu Chuan Pu (郵傳部), whose special functions were to act as controller of receipts from railways, postal administration, telegraphs and navigation.

No great public enthusiasm was shown in these new banking enterprises, and no other institutions on Western lines were established by private interests even down to the closing years of the Ching Dynasty. It was not until the first decade of the Republic, and more especially during the World War, that modern banking business in China made rapid progress. With the closing of several foreign banks as a result of the War, and with home industries enjoying a period of prosperity and exports increasing enormously, Chinese business men were encouraged to open new banks, which were urgently needed to meet the conditions then existing.

In 1921 a check was experienced in development of the banking business, arising out of the "exchange crisis".* During this difficult period, the banks devoted their energies and resources to improving their organisation and strengthening their position. Another period of active development followed a few years later, especially in Shanghai, and new banks were established, existing ones extended their activities, and there were mergers among the smaller concerns. One point worth notice in this connection was the opening of branches and sub-branches in many interior districts and towns, and also in various parts in Shanghai city. The flourishing condition of Chinese banks may be attributed to the fact that money flows from the interior to the coast for safe-keeping on account of bad business conditions, that foreign capital comes in for investment in China taking advantage of cheap silver and the idle money resulting from depression abroad, and that business in securities has been very profitable owing to the Government's efforts ot maintain the value of national bonds.

NEW BANKS ESTABLISHED IN KIANGSU PROVINCE

	Number
1906–1911	4
1912–1916	16
1917–1921	10
1922–1926	15
1927–1932	73
Date unknown	36
Total	154

CLASSES OF BANKS

There are nine classes of modern Chinese banks established in the Province; and their general activities and methods of working are as follows:—

1. Central Bank.—The Central Bank of China is a Government bank with special privileges of issue and minting, also acting as a national treasury, and as agents for national bonds and Treasury bonds.

*Vide Chapter VI, Exchanges.

Foreign Exchange Banks.—By special decree of the Government, the Bank of China was chartered as a foreign exchange bank, and has a Board of 15 directors, with a supervisory committee of five. Three members of the board and one of the supervisory committee are appointed by the Ministry of Finance, the remainder being elected by shareholders. Five executive directors are elected from and by the directors themselves, and from these the Governor is chosen. The head office, as provided in the charter, must be established in Shanghai.

Special Chartered Industrial Banks—The Bank of Communications was in 1928 converted into a special chartered industrial bank by Government charter. The particular functions of this bank are, (1) to act as agent for underwriting and payments of interest on industrial loan bonds, (2) to act as treasury for communication organisations, (3) to take charge of measures for the development of industries, (4) to act as national treasury, and (5) to issue notes. The head office is established in Shanghai, and the authorised capital has been reduced from $20,000,000 to $10,000,000.

Local banks—Local banks are of two main groups, provincial and district (or *hsien*) banks. The Kiangsu Provincial Bank is established in Shanghai, with branches in all important *hsien* throughout the Province. Its business covers the usual range of commercial banking, and the bank acts as agent for the provincial treasury. District banks, such as the Kiating District Bank, Taitsang District Bank, etc. are operated on the same lines but on a smaller scale

Commercial Banks—Commercial banks form by far the largest and the most important group. Their main business consists of deposits, loans, and exchange, but many give particular attention to special lines of business, such as savings, trust service, oversea affairs, etc.

Savings Banks—There are either institutions devoted wholly to receiving savings deposits, or special departments maintained by commercial banks. In the first category, the most important is the Four Banks Joint Savings Society and the Hin Hua Savings Bank. Commercial banks

maintaining a savings department are the Shanghai Commercial and Savings Bank, the National Commercial Bank, the Chekiang Industrial Bank, the Kincheng Banking Corporation, the China and South Seas Bank, the Continental Bank, the Yien Yeh Commercial Bank, etc.

Agricultural and Industrial Banks—The main purpose of this group is to advance loans and invest in agriculture, land development, mining, etc. The Chuan Yeh bank, etc. come under this head.

Trade banks—Examples of this group are the Bank for Pawnshops in Sungkiang, and the Yien Yieh Bank, which is interested solely in the salt industry.

DISTRIBUTION

There are 154 bank offices in Kiangsu Province, of which 60 are head offices and 94 branches. Most of them are centered in Shanghai, while those in various districts have their head office in that city. The following table shows the distribution of banks in the Province:

	Head Offices.	Branch Offices.
Shanghai	49	10
Native city	1	0
Wuchin	0	5
Wuhsien	1	11
Kunshan	1	1
Kiating	1	2
Wukiang	1	2
Kiangning	1	19
Wusih	0	7
Chinkiang	1	6
Sungkiang	0	2
Changshu	0	5
Taitsang	1	1
Tsingpu	0	1
Tanyang	0	1
Natung	0	4
Jukao	0	1
Huaiyin	0	1
Kiangtu	0	3
Kuanyun	0	2
Peihsien	1	0
Tungshan	1	5

Kaoshun	0	1
Taihsien	0	1
Yencheng	0	1
Fenghsien	1	0
Tunghai	0	2
Total	60	94

RESOURCES

The main financial resources of these banks consist of capital funds, reserves, deposits, and notes issued. The total capital invested in all the banks in the Province is estimated at over $165,618,000, giving an average per bank of about $2,760,000, details being as follows:—

Amount of capital	Number of banks
Under $100,000	4
10,001 – 500,000	21
500,001 – 1,000,000	8
1,000,001 –2,000,000	6
2,000,001 – 3,000,000	4
3,000,001 – 4,000,000	0
4,000,001 – 5,000,000	4
5,000,001 – 6,000,000	1
6,000,001 – 7,000,000	1
7,000,001 – 8,000,000	0
8,000,001 – 9,000,000	1
9,000,001 – 10,000,000	5
10,000,001 – 20,000,000	4
Over $20,000,000	1
Total	60

As to reserve funds, these are estimated at about one-third of the total authorised capital of all banks. The following figures show the position at the end of 1931:—

Reserve Funds	Number of banks
Under $100,000	9
100,001 – 500,000	9
500,001 – 1,000,000	2
1,000,001 – 2,000,000	5
2,000,001 – 3,000,000	8
3,000,001 – 4,000,000	1
4,000,001 – 5,000,000	0
Over $5,000,000	2
Total	36

Deposits, which are the most important item among resources, have been increasing very rapidly during the last few years. The following table shows the remarkable increase in the deposits held by all Chinese Banks in Shanghai in units of $1,000:—

	1927	1928	1929	1930
Dollar deposits:—				
Head Offices	576,626	740,721	872,091	1,110,926
Branches	121,660	158,004	150,691	194,086
Tael deposits	24,978	36,211	39,787	51,229
Straits dollars	51,058	71,592	89,650	93,718
Hongkong dollars	23,455	20,517	21,202	27,647

The volume of deposits held by Chinese banks in Shanghai at the end of 1931 is shown as follows:

Amount	Number of banks
Under $1,000,000	8
1,000,001 – 5,000,000	13
5,000,001 – 10,000,000	8
10,000,001 – 50,000,000	10
50,000,001 – 100,000,000	6
100,000,001 – 500,000,000	1
Over $500,000,000	1
Total	47

As to the nature of these monies, the bulk are in the form of current deposits, details being as follows, expressed in $1,000:—

	No. of Banks	Current Deposits.	Percent of Total.	Fixed Deposits.	Percent of Total.	Other Deposits.	Percent of Total.	Total	Percent
Dollar Deposits:—									
Head Offices	37	$237,168	21.34	$742,874	66.91	$130,884	11.75	$120,926	100
Branches	7	92,152	47.50	47,911	24.71	53,982	27.79	194,086	100
Tael Deposits	2(1)	11,476	22.00	17,879	25.52	26,873	52.48	51,729	100
Straits Dollar Deposits	3(2)	—		—		93,718	100.00	93,718	100
Hongkong Dollar Deposits	1(3)	—		—		27,647	100.00	27,647	100

(1) Ningpo Commercial Bank and Commercial Bank of China

(2) Bank of East Asia, Ho Hong Bank and Chung Hsing Bank

(3) Bank of Canton

Note Issue—The issue of currency notes also forms an important feature of banking activities. The Chinese banks which have the privilege of issuing notes are the Central Bank of China, Bank of China, Bank of Communications, the Chnia and South Sea Bank (issued and secured jointly by the China and South Sea Bank, the Yien Yeh Commercial Bank, the Kincheng Banking Corporation, and the Continental Bank, but issued in the name of the first), the National Commercial Bank, the Ningpo Commercial Bank, the Industrial Bank of China, the Land Bank of China, and the Agricultural and Industrial Bank. The amount of notes issued during recent years is as follows:—

1928	$123,646,000
1929	160,172,000
1930	254,460,000
1931	248,210,000

BANK INVESTMENTS

The resources of the Kiangsu banks are invested mainly in loans and securities.

Loans—With the sole exception of the Kiangsu Farmers' Bank, most of the loans advanced by banks in this Province are in the form of commercial loans, which may be for a fixed period or current. As complete statistics regarding commercial loan are not available, the following cases are cited as example:

BANK OF CHINA: LOANS AND DISCOUNTS

	Percent
Current advances and overdrafts	29
Fixed loans	49
Due from banks	13
Discounts and bills purchased	9

SHANGHAI COMMERCIAL AND SAVINGS BANK: LOANS AND DISCOUNTS

Loans against commodities and documentary bills.	61.07
Credit loans	20.90
Collateral loans advanced by Savings Dept.	9.79
Loans against securities	5.60

The average amount of loans advanced by each bank in the Province ranges between 10 and 50 million dollars,

equal to about 87 per cent of the total deposits received. The following table shows details of loans advanced by banks in Kiangsu (members of the Bankers' Association only).

Amount of loans	Number of banks
$1,000,000 –$5,000,000	1
5,000,001 – 10,000,000	4
10,000,001 – 50,000,00	13
50,000,001 – 100,000,000	7
100,000,001 – 500,000,000	1
Over $500,000,000	1
Total	27

There is only one farmers' bank in the Province, the Kiangsu Farmers' Bank, which extends loans to cooperative societies and other farmers' organisations, and also makes small advances to farmers. Branches are established in nearly all important parts of the Province, and the total advances amount to over three million dollars annually. The following table shows the loans advanced during 1931 by all the branches of the Kiangsu Farmers' Bank:

	To Cooperative Societies	To Farmer's Organizations	Advances Against Savings	Petty Advances	Other Advances	Total
Chinkiang	$184,524	$ 3,290	$ ——	$ 500	$331,416	$ 519,732
Nanking	126,004	300	——	——	13,977	140,281
Wuchin	288,814	21,968	81,891	——	134,378	527,051
Wusih	40,632	46,873	77,911	68,155	42,866	276,437
Wuhsien	21,885	400	——	600	3,099	25,984
Sungkiang	238,747	——	150	53	8,438	247,388
Kiating	5,020	——	——	97,909	18,500	121,429
Changshu	289,037	5,071	34,066	5,635	——	333,809
Wukiang	165,542	——	80,743	17,775	11,000	275,060
Kaoshun	79,254	——	——	——	——	79,254
Kunshan	60,078	4,234	51,212	40,695	5,316	161,533
Tsingpu	41,194	1,300	16,914	77,522	15,500	152,430
Tanyang	182,559	——	——	2,719	11,575	196,853
Jukao	53,968	32,212	20,407	——	——	106,587
Total	1,777,258	115,648	363,294	311,561	596,065	3,163,826

Securities—A large amount of bank funds are invested in securities which include local and foreign stocks and shares, bank shares, foreign stocks and bonds, Chinese Government bonds, etc. The last-named form the largest proportion of all securities held, Government bonds being used both as an investment and as reserve against note-issue. The following table shows the proportion of securities to total assets as at the end of 1931 (member banks of the Bankers' Association only):

	Value of Securities Held	Per cent of Total Assets
Central Bank of China	480	0.01
Bank of China	72,024,498	8.51
Bank of Communications	21,357,652	7.39
Shanghai Commercial & Savings Bank	10,212,635	7.80
Kincheng Banking Cor.	13,273,915	13.14
National Commercial Bank	8,324,228	9.25
China & South Sea Bank	12,810,235	14.77
Yien Yeh Bank	10,249,217	12.29
Continental Bank	8,630,641	11.61
Industrial Bank of China	5,249,527	7.17
Ningpo Commercial Bank	3,873,993	5.88
China Banking Corporation	701,539	1.27
Bank of Canton	2,817,562	5.26
Chekiang Industrial Bank	14,025,982	28.29
Commercial Bank of China	25,901,610	5.29
Bank of East Asia	864,712	2.19
Agricultural & Industrial Bank	3,927,986	16.74
Land Bank of China	3,306,449	14.89
China State Bank	1,730,470	9.28
Young Brothers Bank	1,159,303	6.29
Chung Foo Union Bank	3,698,346	21.82
Tung Lai Bank	1,937,632	11.91
Sin Hua Bank	4,325,819	27.72
Kiangsu Bank	1,660,792	12.08
Yung Heng Bank	133,192	1.80
Chung Hua Bank	294,112	7.16
Joint Savings Society	25,585,885	33.09
Total	234,767,412	9.38

PROFITS

In spite of the general business depression, banking business in China, especially in this Province, has been developing very rapidly. Bank profits have been increasing every year, and have more than doubled as compared with five years ago. The following table shows bank profits in relation the capital invested:

The following is a list of banks in Shanghai and elsewhere in Kiangsu Province:

	Paid-up Capital	Net Profit for Year	Percen of Capita
Central Bank of China ..	20,000,000	4,870,404	24.54
Bank of China	24,711,700	1,837,428	7.44
Bank of Communications ..	8,715,575	787,572	9.04
Shanghai Com. & Sav. Bank	5,000,000	797,229	15.94
Kincheng Banking Corp. ..	7,000,000	942,056	13.46
National Commercial Bank	4,000,000	736,890	18.42
China & South Sea Bank ..	7,500,000	1,267,734	16.90
Yien Yeh Bank	7,500,000	916,626	12.22
Continental Bank	3,758,600	651,943	17.35
Industrial Bank of China ..	3,299,350	302,461	9.17
Ningpo Commercial Bank .	2,250,000	523,847	23.28
China Banking Corporation	13,140,590	1,025,825	7.81
Bank of Canton	9,358,848	831,041	8.88
Chekiang Industrial Bank .	2,000,000	512,095	25.60
National Commercial Bank of China	3,472,222	281,423	8.10
Bank of East Asia	5,400,000	676,171	12.52
Agricultural & Industrial Bank	3,190,000	292,317	9.16
Land Bank of China	2,500,000	193,572	7.72
China State Bank	2,337,900	450,610	19.27
Young Brothers Banking Corp.	1,000,000	142,825	14.28
Chung Foo Union Bank ..	2,000,000	33,240	10.66
Tung Lai Bank	3,000,000	55,058	1.84
Sin Hua Bank	2,000,000	147,291	7.36
Kiangsu Bank	700,000	157,626	22.52
Yung Heng Bank	700,000	68,984	9.85
Chung Hua Com. Bank ...	250,000	87,245	34.90
Four Banks Joint Savings Society	1,000,000	2,227,434	22.27
Kiangsu Farmer's Bank ..	1,956,249	82,379	4.21

The following is a list of banks in Shanghai and elsewhere in Kiangsu Province:

Name	Established	Authorized Capital	Reserves	Total Assets
Central Bank of China	1928	$20,000,000	$1,352,231	$124,336,224
Bank of China	1912	25,000,000	1,223,958	773,371,618
Bank of Communications	1908	10,000,000	2,167,857	275,664,496
National Commercial Bank	1906	2,500,000	1,837,029	77,870,971
Shanghai Commercial and Saving Bank	1914	5,000,000	2,000,000	108,085,687
Chung Foo Union Bank	1917	2,000,000	430,000	15,511,755
Chung Hua Commercial and Savings Bank	1912	250,000	227,758	4,066,456
Yung Heng Bank	1918	500,000	114,729	10,090,200
Hsin Hua Savings Bank	1914	2,000,000	——	15,511,755
China and South Sea Bank, Ltd.	1921	20,000,000	1,250,000	88,632,506
Kiangsu Bank	1912	1,000,000	726,479	12,555,708
China State Bank	1928	200,000	90,196	14,200,428
Land Bank of China	1929	2,500,000	155,419	22,200,824
Chinese Industrial Bank	1921	1,000,000	585,344	6,784,191
China Coal Industrial Bank	1921	400,000	38,400	3,514,257
Hsin Tung Bank	1921	500,000	——	4,905,258
Cheng Ta Bank	1925	250,000	28,200	4,507,706
Tung Ho Bank	1925	500,000	27,000	7,072,975
Agricultural and Industrial Bank of China	1927	10,000,000	213,000	21,553,119
Tun Chu Bank	1922	200,000	5,000	956,756

Shanghai Women's Commercial and Savings Bank	1924	200,650	13,405	3,472,845
Kiangnan Bank	1922	500,000	—	2,472,845
Manufacturers' Bank	1929	5,000,000	9,433	10,441,795
Municipal Bank of Shanghai	—	1,000,000	10,990	4,913,641
Mercantile Bank of China	1928	500,000	11,953	2,470,135
Anhui Bank	1929	500,000	23,600	1,906,156
Ta Lai Bank	1930	500,000	—	1,330,133
Ming Hsin Bank	1930	500,000	—	2,155,200
Tai Ping Bank	1930	1,000,000	3,589	2,007,133
Shanghai Pootung Bank	1928	100,000	—	1,590,818
Shanghai Tung Yi Bank	1931	3,000,000	—	—
National Commercial Bank	1927	₮ 5,000,000	—	₮24,603,806
Ningpo Commercial Bank	1908	1,500,000	₮ 400,000	44,285,663
Industrial Bank of China	1919	$2,000,000	$ 413,779	$84,331,998
Shanghai Trust Bank	1930	200,000	—	—
Chung Woo Bank	1931	500,000	—	84,331,998
China Development Bank	1931	2,000,000*	—	—
Kiangsu-Chekiang Bank	1931	1,000,000	—	—
Shih Chien Bank	1931	200,000	—	—
Bank of East Asia	1931	500,000	—	—
Hua Tung Bank	1931	500,000	—	—
Silk Commercial and Savings Bank	1931	600,000	30,000	—
Chung Wei Bank	1929	1,000,000	—	—
Yien Yeh Bank	1914	10,000,000	2,598,212	73,136,969
Young Brothers' Banking Corporation	1913	1,000,000	256,400	17,187,588

Kincheng Banking Corporation	1917	10,000,000	2,210,000	81,626,013
Tung Hua Bank	1918	3,000,000	206,744	15,237,503
Continental Bank	1919	5,000,000	1,603,570	51,061,312
Hongkong National Bank	1922	5,000,000	——	12,088,241
Bank of Amoy	——	1,200,000	72,482	5,741,996
Bank of East Asia	1918	10,000,000*	——	119,858,442*
Ho Hong Bank	1927	20,000,000*	1,000,000*	24,130,461*
Bank of Canton	1912	8,665,600	——	45,546,826
China Banking Corporation	——	5,713,300	682,026	23,192,107

BANKS IN KIANGSU PROVINCE (OTHER THAN SHANGHAI)

Name	Established	Scope of Business	Volume of Business	Principal Clients
Wusih				
Kiangsu Provincial Bank Branch	1912	Commercial banking, Provincial treasury	——	Silk and rice merchants.
Shanghai Commercial and Savings Bank Branch	1915	Commercial banking	$ 50,000,000	Silk, cotton goods, and flour mills, & rice merchants.
Banking of Communications Branch	1913	Commercial banking	165,700,000	— do —
Bank of China Branch	1914	Commercial banking	60,000,000	— do —

*Straits dollars.

Industrial Bank of China Branch	1931	Commercial banking	$ 25,000,000	Silk, cotton goods, and flour mills and rice merchants.
Continental Bank Branch	1930	Commercial banking	26,000,000	— do —
Kiangsu Farmers Bank 4th District	1930	Loans to Farmers Cooperative Societies	4,643,000	Farmers' Cooperative Societies.
Wuchin				
Shanghai Commercial & Savings Bank Branch ..	1919	Commercial banking and savings	10,400,000	——
Bank of China Branch....	1930	Commercial banking	5,000,000	——
Bank of Communications Branch	1931	Commercial banking	300,000 (8 months)	——
Kiangsu Bank Branch ..		Commercial banking, Prov. Govt. agents	——	Govt. 30%, Merchants 60% and Individuals 10%.
Kiangsu Farmers Bank Branch	1929	Commercial banking and savings	——	——
Chinkiang				
Central Bank Branch	1931	Customs Agent	74,000,000	Govt. 50% Merchants 50%.

Bank of China Branch ...	1913	Commercial banking	40,000,000	Merchant 50%, Individual 50%.
Bank of Communications Branch	1913	Commercial banking	45,000,000	——
Shanghai Commercial & Savings Bank Branch ..	1931	Commercial banking	700,000	——
Kiangsu Bank Branch ...	1912	——	10,000,000	——
Industrial Bank of China Branch	1931	——	1,000,000	Merchants 50%, Individuals 50%.
Kiangsu Farmers Bank Branch	1928	Loans to Farmers Cooperative Societies	11,000,000	Farmers.
Wuhsien				
Bank of China Branch ...	——	Commercial banking	——	——
Bank of Communications Branch	——	——	——	——
Kiangsu Bank Branch	——	——	——	——
Shanghai Commercial & Savings Bank Branch ..	——	——	——	——

Tien Nien Bank	—	—	—	—
China State Bank Branch	—	—	—	—
Sin Fu Bank	—	—	—	—
Industrial Bank of China Branch	—	—	—	—
Kincheng Banking Corporation	—	—	—	—
Manufacturers' Bank	—	—	—	—
Kiangsu Farmers Bank ..	—	—	—	—
Continental Bank	—	—	—	—
Sungkiang				
Tien Nien Bank	—	—	—	—
Industrial Bank of China Branch	1932	—	—	—
Farmers Bank 6th District	—	—	1,200,000	—
Kunshan				
Kiangsu Farmers Bank Branch	1929	—	3,278,000	—
Kunshan Bank	1923	Commercial banking	1,500,000	—
Changshu				
Ta Hsing Bang	1922	—	500,000	—
Commercial Bank	1922	—	400,000	—

Li Hua Bank	1929	———	300,000	—
Tung Yih	1929	———	500,000	—
Cheng Nien	1931	———	2,000,000	—
Kiating				
Kiangsu Farmers Bank 7th District	1931	Commercial banking	270,000	—
Kiating Bank	1923	Commercial banking	2,090,000	—
Postal Savings Bank	1930	———	56,000	—
Taitsang				
Taitsang Bank	1921	Commercial banking	750,000	—
Kiangsu Farmers Bank ..	1931	———	22,000	—
Wukiang				
Kiang Feng Bank	—	———	—	—
Bank of China Branch ...	—	———	—	—
Kiangsu Farmers Bank ..	1929	———	500,000	—
Tsingpu				
Kiangsu Farmers Bank Branch	1930	Commercial banking	900,000	—
Tanyang				
Kiangsu Farmers Bank Branch	1930	Commercial banking	363,000	—

Nanking					
Central Bank of China					
Branch	—				
Bank of Communications					
Branch	—				
Shanghai Commercial &					
Savings Bank Branch ..	—				
Kiangsu Bank Branch	—				
Nanking Municipal Bank	—				
China and South Sea Bank					
Branch	—				
China State Bank Branch .	—				
Industrial and Agricultural					
Bank of China	—				
Kiangsu Farmers Bank ..	—				
National Commercial Bank					
Branch	—				
Nantung					
Bank of China Branch ...	—				

Bank of Communications Branch	—	———	—	—
Shanghai Commercial & Savings Bank Branch ..	—	———	—	—
Kiangsu Bank Branch ..	—	———	—	—
Tungshan				—
Bank of China Branch ..	1914	Commercial banking	1,000,000	—
Bank of Communications Branch	1913	Commercial banking	200,000	—
Agricultural and Commercial Bank (Honan)....	1931	Commercial banking	300,000	—
Kuo Ming Bank	1929	Commercial banking	300,000	—
Central Bank of China Branch	—	Commercial banking	1,000,000	—
Kiangsu Farmers' Bank Branch	1931	Commercial banking	300,000	—
Jukao		———		—
Kiangsu Farmers Bank 11th District	—	———	200,000	—
Kaoshun		———		—
Kiangsu Farmers Bank Branch	1929	———	1,200,000	—

Huayin				
Bank of China Branch ...	1914	———	80,000	—
Taihsien				
Bank of China Branch ...	1932	———	—	—
Kiangtu				
Bank of China Branch ...	—	———	—	—
Yencheng				
Kiangsu Farmers Bank ..	1931	Commercial banking	2,000,000	—
Kuanyun				
Bank of China Branch ...	1932	Commercial banking	50,000,000	—
Shanghai Commercial & Savings Bank Branch ..	1931	———	5.000,000	—
Peihsien				
Sin Pai Bank	1930	———	800,000	—
Fenghsien				
Agricultural & Commercial Bank	1931	Commercial banking	200,000	—
Tunghai				
Bank of China Branch ...	1926	———	7,700,000	—
Kuo Min Bank	1929	———	700,000	—
Shanghai Hsien				
Pu Hai Bank	1924	Commercial banking	—	—

The following table shows the position of members of the Bankers' Association and their business condition in 1932:

	Paid-up Capital	Reserve	Deposits	Loans	Securities	Total Assets	Net Profi
Central Bank of China	$20,000,000	$3,496,456	$90,587,668	$97,953,665	$ 480	$145,331,820	$4,870,404
Bank of China	24,711,700	2,830,268	608,164,569	529,362,411	72,024,498	846,210,088	1,837,428
Bank of Communications	8,715,575	6,636,584	190,334,953	170,032,138	3,357,652	288,912,755	787,572
Shanghai Com. & Savings Bank	5,000,000	2,537,037	99,692,333	90,280,401	10,212,635	130,978,641	797,229
Kincheng Bank	7,000,000	2,408,778	90,709,516	68,685,186	13,273,915	101,060,350	942,056
National Com. Bank	4,000,000	2,169,590	71,802,970	54,716,099	8,324,228	90,018,487	736,890
Yien Yeh Bank	7,500,000	5,094,762	69,900,754	65,088,866	10,249,217	86,702,424	1,267,734
China & South Sea Bank	7,500,000	1,493,505	76,441,185	66,751,255	12,810,235	83,412,142	916,626
Continental Bank	3,758,600	1,802,294	67,728,073	51,721,613	8,630,641	74,342,942	651,943
Industrial Bank of China	3,299,350	1,330,221	43,703,228	39,836,933	5,249,527	78,271,033	302,461
Ningpo Commercial Bank	2,250,000	1,219,206	50,145,442	40,879,135	3,875,993	65,890,955	523,846
Chinese Banking Corporation	13,140,590	2,269,649	36,932,166	42,208,924	701,539	55,397,704	1,025,825
Bank of Canton	9,358,848	1,297,085	35,704,518	40,505,035	2,817,562	53,475,165	831,041

Chekiang Industrial Bank	2,000,000	2,486,043	38,668,334	26,932,775	14,025,982	49,577,513	512,095
National Com. Bank	3,472,222	2,744,317	32,422,661	29,023,827	2,590,610	48,917,894	281,423
Bank of East Asia	5,400,000	2,877,918	27,518,744	26,566,502	864,712	39,550,167	676,171
Agricultural & Com. Bank of China	3,190,000	478,374	13,080,006	11,667,645	3,927,986	23,459,008	292,217
Land Bank of China	2,500,000	155,019	12,528,030	10,782,439	3,306,449	22,200,824	193,572
China State Bank	2,337,900	163,888	3,819,221,	12,319,805	1,730,470	18,638,108	450,610
Young Brothers Banking Corp.	1,000,000	306,741	13,466,082	12,235,210	1,159,303	18,443,885	142,825
Chung Foo Union Bank	2,000,000	451,623	11,952,251	9,725,459	3,698,364	16,551,290	213,240
Tung Lai Bank	3,000,000	275,428	12,672,472	13,744,392	1,937,632	16,268,213	55,058
Sin Hua Bank	2,000,000	——	11,746,997	8,759,275	4,325,819	15,606,472	147,291
Kiangsau Provincial Bank	700,000	791,676	9,883,123	8,961,172	1,660,792	13,752,119	157,626
Yung Heng Bank	700,000	127,426	4,641,194	5,801,505	133,192	7,387,604	68,984
Chung Hua Com. Bank	250,000	356,257	2,612,188	2,893,934	294,112	4,105,690	87,245
Joint Savings Society	1,000,000	604,156	73,497,071	32,800,165	25,585,885	77,328,661	2,227,434
Joint Treasury	——	——	——	——	——	35,813,752	——
Total	145,784,785	46,404,296	1,809,355,749	1,570,234,764	234,767,412	3,503,005,706	20,996,847

FOREIGN BANKS IN SHANGHAI:

	Capital	Reserves	Note Issued	Total Assests	
Chartered Bank of India, Australia and China	3,000,000	4,000,000	1,909,534	54,802,422	£
Hongkong and Shanghai Banking Corporation	50,000,000	6,500,000 ₹ 519,531	5,917,433	66,427,917	Hk.$
National City Bank of New York	110,000,000	90,000,000	——	1,842,885,588	U.S.$
Yokohama Spiecie Bank	100,000,000	113,500,000	3,673,156	1,253,644,093	Yen
Netherlands Trading Society	80,030,000	40,015,000	——	662,144,029	Gld.
Banque Belge Pour l'etranger S. A...	200,000,000	120,000,000	6,432,179	4,862,325,036	Frs.
Bank of Taiwan	15,000,000	414,000	29,907,552	439,870,696	Yen
Sumitomo Bank	70,000,000	27,000,000	——	823,490,019	„
Mitsui Bank	100,000,000	64,700,000	——	866,536,763	„
Mitsubishi Bank	100,000,000	64,700,000	——	——	„

Bank of Chosen	40,000,000	2,901,026	90,946,294	512,604,347	Yen
Merchantile Bank of India	3,000,000	1,500,000	1,175,226	17,643,623	£
Chase Bank	2,000,000	2,000,000	——	20,145,834	U.S.$
Nederlandsch Indische Handelsbank, N. V.	100,000,000	21,190,007	——	277,363,195	Gld.
American-Express	6,000,000	862,999	——	38,215,160	U.S.$
Banque Franco Chinoise Pour Je Commerce et l'Industrie	50,000,000	5,000,000	——	983,615,355	Frs.
Deutch-Asiatische	4,600,000	460,000	43,880	40,242,621	M.
Banque de l'Indochine-Agence de Shanghai	72,000,000	9,508,000	——	2,998,390,029	Frs.
American Oriental Bank	1,732,448	689,022	784,745	13,845,343	$
Far Eastern Bank	5,170,172	——	——	31,490,268	G. Rbls.
Thriftcor Bank	396,449	43,079	——	3,243,200	$
Underwriter Savings Bank for the Far East	500,000	31,413	——	1,275,623	U.S.$

CHAPTER 11

NATIVE BANKS

THE SHANGHAI money-market is dominated by three influences, the foreign banks, Chinese "modern style" banks, and native banks. Being much the oldest of current financial institutions, the native banks have a position quite as important as, if not in some respects most important than, the two other groups. There is no authoritative history showing origin of these banks, but it is safe to say they have evolved to their present form from financial media originating many hundred years ago. In Shanghai the native banks were functioning long before the place was opened by treaty as a commercial port. In those days the principal business of these banks was money changing, as the currencies then used were in sycee of varying sizes and finenesses, which required constant weighing and testing by men who knew the work. As time went on, and Shanghai made headway in commercial development, large quantities of beans, wheat, and other cereals arrived from the interior, while cotton yarn, cloth, rice, silk, etc. was sent to the interior in return. The growing business required increasing financial accommodation, and the native bank—up to this time engaged primarily in money changing—began to widen their scope of business by extending credits to businessmen. Loans of all sorts were made to merchants against security or on credit, and the opening of Shanghai to foreign trade furthered its commercial importance, the native banks playing no small part in financing export and import business.

Most of the native banks were originally located in the Nantao district, where trade with other parts of the country was carried on, but a number of new concerns were established in the Northern district after the opening of the port. The native banks were then divided into two groups, Southern district (Nantao) and Northern district banks, engaged in domestic and foreign trade respectively. During

the Boxer trouble business in the Nantao district was almost completely paralysed, and few of the native banks there escaped being compelled to close down. Those in the Northern district, however, mostly in the Foreign Settlement, were fortunate in being able to pass through the trouble without serious loss, with the result that the financial centre of Shanghai shifted from Nantao, where the native banks first started, to the Northern district.

Toward the end of last century, the native banks began to solicit deposits, offering very high rates of interest. The profitable use of these deposits by native banks induced many to establish new ones, while the attractive rates of interest offered attracted large amounts of deposits. The public was fully appreciative of the inducements but was also sensitive about the good standing of the custodians in charge of their cash, and more than once there were runs on banks resulting in the closing of many weaker concerns. The banks did not have enough time to recover fully from this setback when another blow came, the defeat of China by the Allied forces of Britain and France in 1859. Only about 25 banks were able to withstand this new crisis and continued to operate, and during more recent times there were many minor disturbances which caused anxiety. The "rubber boom," which started in 1908, brought about the suspension of over 20 banks in 1910. Merchants invested heavily in rubber companies, and native banks accepted rubber shares as first-class security against credit extended, with consequences which were in some cases disastrous. The Revolution in the following year also exerted an adverse influence on the business of native banks, and only 43 out of the 75 were able to continue operating during that most critical period.

A marked change of general policy was made by the native banks with the beginning of the Republic. After the stormy experiences suffered a more conservative policy was followed, and rapid progress was made during the early years of the new regime. The concerns in the Northern district gained more importance, and most of the big banks in the Southern district moved to the newer area. Native interest rate, which had been quoted by the banks in the Nantao and Northern districts independently, was now unified, and only one quotation—that by the Northern group

—was official. With foundations firmly built, the native banks have been able to carry on without very serious loss even after the unfavourable influence of the "exchange crisis," in 1921 the "May 30 incident" in 1925, the Northern campaign in 1927, and the Japanese hostilities in Shanghai in 1932.

A most noteworthy move made recently by the native banks was the establishment of a Joint Reserve Board on August 2, 1932, for the purpose of stabilising the money-market as well as enhancing the credit of member banks. Properties valued at over $30,000,000 were pooled, including a cash reserve of $3,000,000, the balance consisting of real estate, bonds and shares, and other approved negotiable instruments.

DISTRIBUTION OF NATIVE BANKS

Being the oldest form of financial institutions, the native banks are found everywhere in the Province, although only operating on a small scale as compared with the Chinese modern banks. The native banks in Shanghai, the commercial and financial centre of the country, hold a most important position, not only of the Kiangsu Province, but in the whole country. Banks in other places depend very much upon the assistance of those in Shanghai.

The native banks in Wuhsien are enjoying comparative prosperity, although in recent years they have been affected by bad business conditions in Kiangtu, Huchow (湖州), etc., with which places Wuhsien has close connections. Nanking native banks were operated on a smaller scale, and of minor importance commercially, until 1927, when the National Government was removed from Peiping to Nanking. The scope of business was then widened, overdrafts were allowed, and more loan and discount business done. Chinkiang is the commercial centre and the outlet for products for points on the northern bank of the Yangtse, and the native banks there naturally hold an important position in local trade. At Wuchin there are about 20 native banks, with capital ranging from $30,000 to $100,000, their business being mainly dependent on the silk trade and pawnshops, to which they extend loans on credit. In Wusih, an important industrial city in the Province, both native and modern banks are fairly well developed. Kiangtu, important because of its salt industry,

has a very flourishing banking business, where banks extend advances to salt merchants and act on their behalf in settling taxes, freight charges, etc. The following list shows the distribution of native banks in the Province:

	Number	Total Capital	Annual Turnover.	Remarks
Shanghai	76	₮ 12,340,000 2,423,000 (1)	——	For members of the Native Bank Guild only
Chinkiang	9	282,000	₮ 3,000,000	
Nanking	56	336,400	——	——
Wuchin	20	604,400	5,400,000	——
Wuhsien	30	485,000	7,500,000	
Wusih	18	1,220,000	13,350,000	
Tsingkiang	2	7,000	1 00,000	
Taihsien	14	15,000	——	3 banks only
Luho	7	176,000	3,000,000	
Ihsing	2	26,000	350,000	
Huaiyiu	10	78,600	187,000	
Nantung	14	300,000	980,000	Capital for 10 banks and turnover for 4 banks only
Huaian	12	42,400	171,000	Capital for 10 banks only
Yencheng	7	——	——	——
Kuanyun	1	30,000	300,000	——
Tanyang	9	90,000	155,000	——
Kunshan	2	40,000	1,500,000	——
Sungkiang	4	——	——	——
Changshu	5	$ 145,000 ₮ 20,000	$1,000,000	——
Kiangyin	8	88,000	——	——
Wukiang	3	——	——	——
Taitsang	4	89,000	₮ 730,000	——
Lishui	1	10,000	80,000	——
Icheng	3	38,000	320,000	——
Chitung	1	20,000	100,000	——
Haimen	1	16,000	30,000	——
Paoying	4	100,000	360,000	——
Taihsing	4	35,000	600,000	——
Tungtai	3	28,000	280.000	——
Founing	4	25,000	270,000	3 banks only
Hsinghua	4	14,000	100,000	"
Jukao	5	56,500	187,000	——
Tunghai	2	——	800,000	——
Liyang	3	80,000	500,000	——
Chinshan	3	12,000	230,000	——
Kiangtu	13	$ 829,000	$ 8,800,000	——
Kaoyu	12	₮ 12,000	——	——

(1) Supplementary capital.

CAPITAL AND BUSINESS

The capital of native banks is small as compared with modern financial institutions the concern with the biggest capital being a Shanghai bank with Tls. 600,000. Capital of $100,000 for native banks in the interior is considered quite a fair-sized enterprise. The Capital of Shanghai native banks is as follows:—

Capital	Number of Banks	Total Capital
₮60,000	2	₮ 120,000
100,000	6	600,000
120,000	4	480,000
140,000	1	140,000
150,000	1	150,000
160,000	6	960,000
170,000	1	170,000
180,000	2	360,000
200,000	27	5,400,000
220,000	5	1,100,000
240,000	3	720,000
250,000	1	250,000
260,000	2	520,000
300,000	5	1,500,000
360,000	2	720,000
500,000	3	1,500,000
600,000	1	600,000
Total	72	₮ 15,290,000

The mode capital is Tls. 200,000 with 27 banks, which shows an increase of double as compared with the mode amount ten years ago, when it was Tls. 100,000. The total capital of all native banks at that time was Tls. 6,026,000, and over three-quarters of the banks now have a capital of Tls. 100,000, the average having risen from Tls. 80,000 to Tls. 210,000 in ten years. In regard to the business organisation of native banks, single proprietorship has given place to partnership as the scope of business becomes wider.

CAPITAL OF NATIVE BANKS IN KIANGSU

(OTHER THAN SHANGHAI)

Capital	Number of Banks
$1,000–$5,000	66
5,000–10,000	58
10,001–20,000	70
20,001–30,000	19
30,001–40,000	24
40,001–50,000	13
50,001–60,000	9
60,001–70,000	1
70,001–80,000	3
80,001–90,000	1
90,001–100,000	2
Over 100,000	5
Total	271

The business engaged in by native banks includes deposits, loans, domestic exchange, and money changing. A feature of these banks is that they advance most of their loans against credit, with the exception of the Wusih banks, which require some kind of tangible security. A change, however, is taking place in the attitude of the Shanghai native banks in that equal emphasis is now laid on security loans as used to be given to credit loans. Indiscriminate loans advanced on personal credit have resulted in considerable loss to the banks, proving that a more conservative policy was necessary. Credit loans are now extended only to selected clients, while collateral loans are gaining more and more importance. Some of the bigger native banks are having their own godowns built for storing goods pledged by merchants for loans.

CLASSES AND ORGANISATION OF NATIVE BANKS

Broadly speaking, the native banks in China are of two groups, the northern or Shansi group, and the southern or the Shaohsing group, but the line of demarcation is becoming obscure. In Shanghai the native banking circle is a composite structure of North and South groups, and is

the most influential force among native banks in the whole country.

The Shanghai native banks are divided into three main classes, according to the business they engage in.

The *hui-hua* native banks (匯劃莊), are banks with large capital and wide scope of business, and belonging to the *Hui-hua* Association (匯劃公會), the clearing place for orders issued by these banks.

Tiao ta native banks (挑打莊), are banks of medium capital and operated on a smaller scale than the *hui-hua*. They are not members of the *Hui-hua* Association, and their orders are not clearable by that association.

Ling tui (零兌莊), are the smallest banks, whose business is primarily money changing and buying and selling local and foreign currencies.

Native banks in Shanghai are classified as *ta tung hang* (大同行), the big size banks and *hsiao tung hang* (小同行), the small size banks. They are also classed as member or non-member banks of the Native Banker's Guild.

In Wuchin the native banks are divided into three classes according to capital, *ta tung hang,* with capital over $40,000, *chung tung hang* (中同行), over $20,000, and *hsiao tung hang,* below $20,000.

The internal organisation of native banks is about the same everywhere in the Province, varying only with the number of persons employed. Generally, there is a manager, with one or two assistant managers, who conduct the business and fix decisions. In some cases a supervisor is appointed by the shareholders but he has no executive authority and acts solely in a supervisory capacity. Under the manager, the staff is divided into eight departments. (1). The accountant, with assistants and clerks, keeps all accounts, prepares statements and reports, determining profit or loss, and calculating interest. (2). The *ke tang* (客堂) receives customers at the counter and takes care of miscellaneous business. (3). The cashier, with assistants and clerks, has custody of all cash and bullion, securities and bills, and keeps records of same. Native bank orders are also issued by the cashiers.

(4). The market representative, or *chien hang* (錢行) participates in discussions for determining interest rate and the dollar rate, and has the buying and selling of dollars in the market. (5). The canvasser, or bank representative, acts as a medium between the firm and customers or prospective clients, and is also entrusted with investigating the credit and financial standing of customers. (6). The *yang fang* (洋房) takes care of dollar accounts. (7). The *yin hang* (銀行) is in charge of relations between the native bank and modern banks. And, (8). The secretary, who is in charge of all secretarial work. In addition to the foregoing there are in most banks a number of apprentices and a few shroffs.

SCOPE OF BUSINESS

The business handled by the "big-size" and "small-size" native banks in Kiangsu differs considerably. The main business activities of the *ta tung hang* or "big size" banks may be described as follows:—

Deposits.—Deposits are of two kinds, current and fixed. Current deposits are withdrawable in part or in full any time against passbook or by check. Fixed deposits cannot be withdrawn before due date except by consent of the bank. There are also "due to banks" accounts, representing deposits by other native or modern banks.

Loans—Loans are extended in four forms, current loans, payable at call or very short notice; long term loans for two, three, six or twelve months, but usually, April and October are the months for settlement of loans; overdrafts by depositors; and "due from banks" accounts. Loans, whether short or long term, are made either against collateral or on the credit of the borrower, but advances to banks are made entirely on credit, and are for one or two days only.

Discounts—Unmatured native orders, drafts, clean or documentary, may be discounted at the native banks, less interest between the date of discount and maturity.

Exchange—Remittances can be made only to points within the country, by either draft or letter. When remitting by letter, the sending bank advises its correspondent

to pay the sum to the beneficiary upon his providing satisfactory identification. Telegraphic transfers are occasionally handled but are not greatly used.

Other business:—Native banks also deal in buying and selling bullion, bonds, and shares for their own account or on behalf on customers. Banknotes of the Central Bank of China, Bank of China, Bank of Communications, and other banks, can be issued through native banks. Many large native banks are also engaged in money changing as a minor business.

Native banks with capital below Tls. 20,000 are what are called *hsiao tung hang* banks, and their business is done on a much smaller scale. Deposits received by these smaller native banks are also of two kinds, current and fixed. The former bearing interest at the current native rate less 5 per cent, and the latter at about 0.8 per cent per month. Loans are made only in small amounts to merchants and factories at the current native rate plus Tls. 9 per Tls. 1,000. Overdrafts are limited to a few hundred taels. Unmatured bills can be discounted at these banks less interest at the rate of 15 to 20 per cent per annum for the number of days remaining. By buying banknotes in bulk and selling again, the native bank make a profit of about five dollars for each $10,000 of notes handled. Buying and selling of foreign currencies is done by only those specialising in exchange, and, besides doing business at the counter, these banks despatch men to incoming vessels to provide passengers and others with local coins and notes in exchange for foreign currency, and quite substantial profit can be made in this business. Many banks contract to buy copper coins from tramway companies and sell them to money changers. Government bonds are also bought in odd lots at the counter, and seld in bulk at the Exchange through brokers.

As these banks are not members of the *Hui-hua* Association their orders can be cleared only through member banks. Usually they keep accounts with *ta tung hang* native banks and modern banks.

The greater part of the profit of native banks is from interest charged on loans, the difference between the interest allowed on deposits and charged for accommodation, and the bank's deposits with other banks, etc.

NATIVE BANKS IN SHANGHAI
(Members of the Native Bankers' Guild)

Name	Address	Capital	Supplementary Capital
Ta Teh I Chi ..... (大德益記)	Tientsin Road	$160,000	——
Yuan Ta (元大) ...	„ „	200,000	——
Wu Feng Hsin Chi.. (五豐信記)	Ningpo Road	200,000	——
Sheng Chang (生昶)	Tientsin Road	200,000	——
Yung Hsing (永興)	Ningpo Road	200,000	——
An Kang Chang Chi (安康昌記)	„ „	195,000	65,000
Chun Teh Ho Chi .. (存德和記)	„ „	60,000	——
Tung Chun Cheng Chi (同祥正記) ..	Tientsin Road	200,000	——
Tung Yu Yung Chi (同餘永記)	Honan Road	200,000	50,000
Chih Cheng Hsin Chi (志誠信記)	„ „	120,000	——
Chun Tai (均泰) ...	Tientsin Road	200,000	100,000
Cheng Yu Sheng Chi (承裕生記)	Ningpo Road	180,000	180,000
Ho Feng (和豐) ...	„ „	100,000	——
Ta Lai (大賚)	Tientsin Road	200,000	——
Yuan Sheng (元盛	„ „	40,000	100,000
Jen Heng Chin Chi (仁亨晉記)	Ningpo Road	200,000	——
Yung Chu (永聚) ..	„ „	100,000	140,000
Yung Feng (永豐)..	„ „	200,000	——
An Yu Tse Chi .... (安裕資記)	„ „	200,000	260,000
Tung An (同安) ...	Tientsin Road	160,000	——
Tung Tai (同泰) ..	Ningpo Road	200,000	——
Chih Yu (志裕)	Honan Road	200,000	——
Chun Chang An Chi (均昌安記)	Nantao	100,000	——
Chang Sheng Hsing Chi (長盛興記) ..	Tientsin Road	120,000	30,000
I Ta Yung Chi ..... (怡大永記)	„ „	180,000	——
Hsin Fu (信孚)	Honan Road	80,000	80,000
Hsin Kang Chang Chi (信康昌記)	„ „	200,000	——
Heng Hsiang Yung Chi (恆祥永記) ..	Ningpo Road	200,000	100,000
Heng Lung Tai Chi (恒隆泰記)	Honan Road	200,000	——

I Ta Chang Chi .... (益大祥記)	Ningpo Road	120,000	80,000
I Kang Feng Chi ... (益康豐記)	" "	120,000	——
Chih Hsiang (致祥)	Nantao	30,000	30,000
Chien Yuan Fu Chi (乾元福記)	"	160,000	——
Shun Kang (順康)..	Tientsin Road	500,000	——
Hui Feng (滙豐) ...	" "	120,000	100,000
I Chang Lien Chi ... (義昌聯記)	Nantao	120,000	——
Yuan Sheng (源升)	"	100,000	——
Fu Kang (福康) ...	Ningpo Road	500,000	——
Hui Chang Teh Chi (匯昌德記)	" "	240,000	——
Hsin Yu (信裕) ...	" "	220,000	——
Heng Shun (恒順)..	" "	220,000	——
Heng Lai Yuan Chi (恒泰元記)	" "	200,000	——
Chun Yuan (春元)..	Shanse Road	200,000	——
I Chang Shen Chi .. (益昌慎記)	Tientsin Road	100,000	——
I Feng Teh Chi .... (益豐德記)	Honan Road	260,000	——
Chen Tai Chung Chi (振泰崇記)	Tientsin Road	160,000	——
Yin Tai (寅泰)	Ningpo Road	220,000	——
Tun Yu Tai Chi .... (敦餘泰記)	" "	200,000	——
I Sheng (義生)	Honan Road	200,000	——
Jui Chang Sheng Chi (瑞祥盛記)	Tientsin Road	200,000	——
Fu Tai (福泰)	Peking Road	200,000	——
Fu Yuan (福源) ...	Ningpo Road	300,000	——
Kuang Yu Ming Chi (廣裕明記)	" "	180,000	180,000
Chu Kang Yuan Chi (聚康源記)	Tientsin Road	220,000	——
Teh Chang (德祥)..	" "	20,000	40,000
Tsu Feng (滋豐) ...	Ningpo Road	200,000	——
Ching Cheng (慶成)	Tientsin Road	200,000	100,000
Ting Sheng (鼎盛)..	" "	100,000	100,000
Heng Chiu (衡九)..	Ningpo Road	40,000	80,000
Hung Hsiang Teh Chi (鴻祥德記) ..	Tientsin Road	300,000	——
Hung Feng (鴻豐)..	Ningpo Road	200,000	——
Pao Feng Hsing Chi (寶豐)	Tientsin Road	100,000	100,000

Tung Ching (同慶)	———	200,000	——
Jung Kang (榮康)..	Tientsin Road	200,000	——
Tse Kang (滋康) ...	Ningpo Road	120,000	480,000
Ching Ta (慶大) ...	Tientsin Road	100,000	80,000
Ting Kang Yuan Chi (鼎康源記)	" "	200,000	——
Cheng Hsiang Heng Chi (徵祥恒記) ..	Nantao	100,000	——
Heng Tung Chun Chi (衡通鈞記)	Ningpo Road	120,000	50,000
Hung Sheng (鴻勝)	Tientsin Road	72,000	168,000
Pao Chang (寶昶)..	Ningpo Road	100,000	100,000
Pao Ta Yu (寶大裕)	Ningpo Road	200,000	——

NATIVE BANKS IN CHINKIANG

	Established	Capital	Annual Turnover
Hsiang Feng (祥豐)	1927	$40,000	$400,000
Mai Chi (邁記)	1899	10,000	150,000
Mai Chi Branch (邁記分號)	——	——	——
Chin Sheng (晉生)	1904	60,000	530,000
Chin Yuan (晉源)	1866	40,000	450,000
Cheng Tai (正泰)	1924	20,000	300,000
Heng Hsiang (恒祥)	1929	32,000	300,000
Tung Yu (同裕)	1909	20,000	150,000
Yuan Kang (元康).....	1928	60,000	850,000

NATIVE BANKS IN NANKING

	Capital
Jung Ho (榮和)	$ 3,000
Shen Kang (愼康)	3,000
Shen Kang (愼康)	1,000
I Feng (怡豐)	20,000
I Kang (怡康)	4,000
Heng Kang (隆康)	2,000
Chen Tai (鎭泰)	1,000
I Chang (益昌)	1,000
I Ta (益大)	3,000

Hou Ho (厚和)	1,000
Tung Hsing (同興)	4,500
Lung Tai (隆泰)	3,000
Tung Ho (同和)	3,000
Chang Ho (長和)	4,000
I Kang (頤康)	13,000
Hou Kang (厚康)	3,000
Tai Hsiang (泰祥)	800
Tai Ho (泰和)	1,000
Yu Chang (裕昌)	3,000
Chien Tai (乾泰)	500
Hsieh Tai (協泰)	500
Chin Kang Shun Chi (勤康順記)	3,000
Chih Heng (志成)	20,000
Shen Yuan (森源)	5,000
Yu Ta (裕大)	15,000
Tao Sheng Hsiang (道生祥)	4,000
Yu Feng (裕豐)	1,000
Hsiang Feng (祥豐)	1,000
Ching Feng (慶豐)	1,000
Hsiang Kang (祥康)	10,000
Yung Yu (湧餘)	500
Tung Yu (通裕)	4,000
Tung Ho (通和)	17,000
Shen Sheng Chi (沈盛記)	500
Hung Ta (洪大)	600
Keng Yuan (庚源)	20,000
Fu Li Keng Chi (福利庚記)	15,000
Fu Kang (福康)	20,000
Pao Yu Heng Chi (保餘恒記)	13,000
Teh Yu (德餘)	6,000
Teh Sheng (德豐)	500

Ting Shen (鼎昇)	500
Ting Yuan (鼎元)	1,000
Jen Tai Chang (仁泰昌)	10,000
Ching Cheng (慶成)	15,000
Kung Ta (公大)	1,000
Shun Kang (順康)	10,000
Chu Yuan (聚源)	1,500
Chu Ho (聚和)	1,500
Chien Kang (建康)	10,000
Tien Sheng (天盛)	500
Chin Ho (晉和)	20,000
Chin Feng (晉豐)	2,000
Chen Feng (震豐)	15,000
Chien I (謙益)	15,000
Pao Yu (寶裕)	1,000

NATIVE BANKS IN WUCHIN

Heng Ta (恆大)	1919	12,000	$100,000
Heng Fu (恆孚)	——	——	——
Wei Feng (蔚豐)	1910	40,000	300,000
Jui Feng Jun (瑞豐潤)	1867	50,000	300,000
Jun Kang (潤康)	1926	20,000	100,000
Hung Hsiang (鴻祥)	1869	40,000	400,000
Tai Cheng (泰成)	——	40,000	200,000
Chen Kang Yuan (振康源)	1916	40,000	300,000
Yu Tung (豫通)	1919	30,000	200,000
Yung Fu (永孚)	1920	50,000	400,000
Tung Teh (同德)	1925	40,000	400,000
Jen Feng (仁豐)	1919	40,000	300.000
Fou Feng (阜豐)	——	40,000	200,000
I Feng (怡豐)	1931	50,000	400,000
Yuan Tung Tai (源通泰)	——	40,000	300,000
Yuan Ta (元大)	1930	40,000	500,000
Sin Ta (信大)	1931	30,000	100,000
Hui Yuan (匯源)	1929	2,400	

NATIVE BANKS IN WUHSIEN

Pao Ta (保大)	1911	$20,000	$400,000
Fu Yu (復豫)	1920	20,000	400,000
Jen Chang Yu (仁昌裕)	1897	20,000	400,000
I Kang (義康)	1929	20,000	400,000
Ting Kang (鼎康)	1929	20,000	400,000
Heng Yu (恒餘)	1923	15,000	300,000
Hsieh Feng (協豐)	1927	15,000	300,000
Tsui Sheng (萃生)	1928	15,000	300,000
Fu Ta (福大)	1924	15,000	300,000
Yung Lung (永隆)	1929	15,000	300,000
Yuan Shun (元順)	1913	15,000	300,000
Tien Sheng (天生)	1931	15,000	300,000
I Ta (義大)	1923	15,000	300,000
Heng Li (恒利)	1929	10,000	200,000
Mao Sheng (茂生)	1924	10,000	200,000
Heng Sheng (鴻盛)	1931	10,000	200,000
Hung Kang (鴻康)	1931	10,000	200,000
Yu Ta (餘大)	1928	10,000	200,000
Hsieh Yuan (協源)	1932	10,000	200,000
Yu Yuan (裕元)	1905	5,000	200,000
I Cheng Yu (義成裕)	1910	20,000	400,000
Shun Kang (順康)	——	20,000	400,000
Yung Feng (永豐)	——	20,000	400,000
Yung Sheng (永生)	1908	30,000	400,000
Chin Sheng (晉生)	1915	20,000	400,000
Chiu Yuan (久源)	1919	20,000	400,000
Chiu Feng (久豐)	1926	20,000	400,000
Feng Tai (豐泰)	1919	20,000	400,000
Ching Tai (慶泰)	1918	20,000	400,000
Hung Yuan (鴻源)	——	20,000	400,000

NATIVE BANKS IN WUSIH

Fu Yuan (復元)	1924	60,000	700,000
Teh Feng (德豐)	——	20,000	400,000
Jui Chang Jun (瑞昶潤) ..	1911	240,000	2,000,000
Yuan Chang (元昌)	1927	60,000	650,000

Fu Chang Sheng (福昌盛).	1929	60,000	800,000
Yung Chi Jun (永吉潤) ..	1921	40,000	1,000,000
Hsin Yuan (信元)	1929	50,000	600,000
Shen Yu (愼餘).....	1919	60,000	700,000
Teh Chang (德昌)	1924	40,000	600,000
Yung Heng Feng (永恆豐).	1920	60,000	800,000
Jui Yu (瑞餘)	1913	60,000	800,000
Pao Kang Jun (寶康潤) ..	1926	40,000	2,000,000
" " ..	1927	40,000	600,000
" " ..	1926	60,000	400,000
" " ..	1912	40,000	500,000
Ta Chang Yung (大昌永) ..	1926	90,000	400,000
I Chang (益昌)	1931	80,000	400,000
Yung Sheng (永昇)	1930	30,000	400,000

NATIVE BANKS IN TUNGSHAN

Tung Ho Yu (同和裕)	1930	30,000	250,000
Kung Yu (公裕)	1927	40,000	100,000
Hsin Chang (信昌)	1930	20,000	30,000
Chung Fu (中孚)	1931	20,000	80,000
Kung Chi (公濟)	1930	10,000	20,000
Chu Cheng (鉅誠)	1931	20,000	50,000
Chun Chuan (春泉)	1912	5,000	10,000
Tien Pao Yu (天保育)	1913	10,000	20,000
Yuan Feng (源豐)	1930	5,000	10,000
f Cheng (茂成)	1929	2,000	8,000

NATIVE BANKS IN LUHO

I Feng Hon (益豐昅)	1894	50,000	1,000,000
Yu Chi (餘記)	1915	20,000	400,000
Ho Chi (和記)	1906	15,000	300,000
I Kang (義康)	1922	35,000	700,000
Pao Yu (寶餘)	1931	25,000	500,000
Ting Kang (鼎康)	1930	25,000	500,000
Tung Fu (通孚)	1921	6,000	100,000

NATIVE BANKS IN HUAIYIN

I Chang (宜昌)	1928	15,000	27,000
Chung Teh (崇德)	1925	10,000	25,000
Ching Sheng (慶生)	1928	9,600	25,000

Fu Kang (福 康)	1929	8,000	20,000
Fou Kang (阜 康)	1931	8,000	21,000
Yu Tai (裕 泰)	1929	8,000	22,000
Hsiang Tai (祥 泰)	1931	6,000	10,000
Li Sheng (律 生)	1913	11,000	5,000
Cheng Ta (正 大)	1932	8,000	24,000
Sheng Ta (蛀 大)	1932	4,000	8,000

NATIVE BANKS IN NANTUNG

Tung Yuan (東 源)	1919	50,000	300,000
Shun Kang (順 康)	1894	40,000	240,000
Sheng Kang (升 康)	1914	20,000	120,000
Hui Yu (匯 裕)	1926	30,000	200,000
Chih Cheng (志 誠)	1928	20,000	80,000
Tai Lung (太 隆)	1930	40,000	——
Ying Tai (鴻 泰)	1931	30,000	——
Hui Feng Ting (匯豐鼎) ..	1931	30,000	——
Heng Tai (恒 泰)	1931	30,000	——
I Kang (益 康)	1927	10,000	40,000

NATIVE BANKS IN HUAIAN

Yuan Ho (源 和)	1914	7,000	27,000
Heng Sheng (恒 盛)	1928	6,000	25,000
Jui Tai (瑞泰)	1925	3,000	11,000
Yu Kang Heng (裕康恒) ..	1922	6,000	23,000
Yung Feng (永 豐)	1928	5,000	24,000
Teh Tai (德泰)	1929	5,000	23,000
Hsiang Yuan Tai (祥源泰)	1919	2,000	9,000
Yuan Chang (源 長)	1928	2,000	9,000
Yuan Tai (源泰)	1924	3,000	10,000
Ting I Hsiang (鼎義祥) ...	1921	3,000	10,000

NATIVE BANKS IN YENCHENG

Fu Shun (復 順)	1873	10,000	100,000
Chi Tai Lung (吉泰隆)	1893	——	——
Yung Yuan (永源)	1928	——	——

NATIVE BANKS IN TANYANG

Chin Sheng (晉 生)	1918	10,000	200,000
Chih Cheng (志 誠)	1923	10,000	200,000
Ting Chin (鼎 九)	1927	10,000	200,000
Yu Tung (裕 通)	1928	10,000	150,000
I Yuan (義源)	1929	10,000	150,000
Chien Chang (建 昌)	1931	10,000	150,000
Chun Chang (駿昌)	1920	10,000	200,000

NATIVE BANKS IN SUNGKIANG

Cheng Ta (承大)	——	——	——
Sheng Yuan (蛙源)	——	——	——
Yu Kang (裕康)	——	——	——

NATIVE BANKS IN CHANGSHU

I Lung (義隆)	1863	28,000	30,0000
Yung I (永益)	1910	20,000	300,000
Chin Tai (晉泰)	1911	20,000	300,000
Teh Yuan (德元)	1925	40,000	300,000
Ta Cheng (大成)	1926	65,000	300,000

NATIVE BANKS IN KIANGYIN

Yung Cheng (永誠)	1930	20,000	——
Hsieh Cheng (協誠)	1929	20,000	——
Tai Chi (泰記)	1928	10,000	——
Fu Ho (福和)	1930	6,000	——
Chang Yuan (長源)	1929	12,000	200,000
Chen Yu (震裕)	1932	10,000	100,000
Hung Mao (鴻茂)	1932	10.000	100.000

NATIVE BANKS IN WUKIANG

Cheng Ta (正大)	——	——	——
Chin Feng (晉豐)	——	——	——
Yung Yuan (永源)	——	——	——
Fu Yuan (福源)	——	——	——

NATIVE BANKS IN TAITSANG

Hsieh Yuan (協源)	1904	25,000	250,000
Tung Kang (同康)	1929	30,000	180,000
Fu Ta (復大)	1918	24,000	.200,000
Yu Hua (裕華)	1921	10,000	80,000

NATIVE BANKS IN KIANGTU

I Sheng (怡生)	1914	150,000	1,200,000
Hui Chang Yung (滙祥永)	1922	100,000	1,500,000
Hui Yu (滙裕)	1916	160,000	3,000,000
Sheng Yuan (生元)	1917	120,000	1,000,000
I Ta (怡大)	1917	80,000	500,000
Te Chun (德春)	1917	40,000	400,000
Hung Ta (鴻大)	1918	50,000	400,000

Heng Chang (衡昌)	1918	30,000	200,000
Li Feng (立豐).....	1915	20,000	150,000
Pao Hsing (寶興)	1928	20,000	100,000
Li Chang (立昌)	1919	200,000	170,000
Te Ta (德大)	1927	15,000	80,000
I Feng (怡豐)	——	24,000	100,000

NATIVE BANKS IN KAOYU

Fu Kang (復康)	——	100,000	——
Heng Hsiang (恆祥)	——	20,000	——
Yung Feng (永豐).....	——	50,000	——
Heng Yu (恆裕)	——	50,000	——
Yuan Ta (源大)	——	50,000	——
Hui Yuan (滙源)	——	30,000	——
Hui Kang Yung (滙康永) .	——	60,000	——
Fou Hsiang (阜祥).....	——	40,000	——
Teh Ta (德大)	——	50,000	——
Chiu Ta (久大)	——	20,000	——
Jung Hsing (榮興)	——	80,000	——
I Hsing (益興)	——	15,000	——

NATIVE BANKS IN JUKAO

Kung Yu (公裕)	1924	10,000	40,000
Yu Feng Ho (裕豐和)	1927	7,500	35,000
Yuan Ta (源大)	1909	8,000	32,000
Yu Ju (裕如)	1920	12,000	40,000
Ting Yu (鼎裕)	1927	9,000	40,000

NATIVE BANKS IN TAIHSING

I Feng Tai (義豐泰)	1911	10,000	160,000
Yung Feng Hou (永豐厚) ..	1916	10,000	160,000
Heng Hou (恆厚)	1921	10,000	160,000
Yung Chang Yu (永昌裕) ..	1921	5,000	120,000

NATIVE BANKS IN OTHER HSIEN

Name	Location	Established	Capital	Annual Turnover
Ta Cheng (大成)	Tsingkiang	——	4,000	60,000
Hsieh Sheng ..... (協興)	〃	——	3,000	40,000
Yung Feng ..... (永豐)	Taihsien	1915	5,000	——
Hsi Chi (熙記) .	〃	1914	5,000	——

Chien I Feng .... (謙益豐)	Taihsien	1909	5,000	——
Ting Kang ..... (鼎康)	Ihsing	1921	16,000	200,000
Heng Tai (恒泰)	〃	1914	10,000	150,000
Hsin Yu (新裕) .	Kunshan	1908	10,000	800,000
Chiu Yu (久餘)	〃	1929	30,000	700,000
Tung Yuan ..... (通源)	Lishui	1922	10,000	80,000
Heng Yu (恒餘)	Icheng	——	20,000	10,000
Fou Chang (阜昶)	〃	1922	8,000	100,000
Ching Feng ..... (慶豐)	〃	1929	10,000	120,000
Cheng Yu (誠餘)	Chitung	1929	20,000	100,000
Teh Kang (德康)	Haimen	1923	16,000	300,000
Ting Sheng Heng (鼎升恒)	Paoying	1912	50,000	200,000
Chu Chang (鉅昌)	〃	1911	30,000	100,000
Chien Chang ..... (乾昌)	〃	1911	20,000	60,000
Tai Cheng (泰成)	Tungtai	1922	15,000	100,000
Yuan Ho (元和) .	〃	——	8,000	100,000
Heng Yu (恒餘) .	〃	1921	5,000	80,000
Tung Yuan ..... (同元)	Founing	1928	10,000	130,000
Ting Sheng ..... (鼎生)	〃	1932	7,500	50,000
Yu Tung (裕東) .	〃	1930	7,500	90,000
Chu Cheng Feng . (聚成豐)	Hsinghua	1929	5,000	40,000
I Tai (怡泰)	〃	1929	5,000	30,000
Hsing Tai (興泰)	〃	1931	4,000	30,000
Tung Ho Yu ..... (同和裕)	Tunghai	1931	10,000	500,000
Yu Min (裕民) ..	〃	1927	——	300,000
Jai Ho (瑞和) ...	Liyang	1907	20,000	160,000
I Yuan (義源) ..	〃	1919	40,000	200,000
Wei Kang (爲康)	〃	1917	20,000	140,000
An Chang (安昶)	Chinshan	1926	4,000	50,000
Heng Sheng ..... (恒升)	〃	1931	4,000	90,000
Chung Yu (崇裕)	〃	1928	4,000	90,000

CHAPTER III

TRUST COMPANIES

THE FIRST Chinese trust company in Kiangsu Province was the Shanghai Tung Shang Trust Company (通商信托公司), established in August, 1921, although many years before such organisations were established in the Three Eastern Provinces, but attracted little public attention. With the opening of this Shanghai company at the beginning of the 1921 "exchange craze," many other similar concerns were established, and at the end of two months there were no less than 11 trust companies operating in Shanghai. These concerns all seemed financially strong, and their boards of directors included the names of many prominant local businessmen, while the total investment represented amounted to over 62 million dollars.

The sudden appearance of so many trust companies proved to be entirely unsound, as their services were not needed, and castles in the air of their optimistic promoters soon vanished. Most of the companies were forced to close, and some were even disolved before being formally opened for business. This disastrous collapse seriously checked the growth of business in this line, with the exception of a few concerns which were thoroughly sound and able to weather the storm.

Years passed before the importance of trust service was realised and public confidence in trust companies restored. The Central Trust Company (中央信托公司) and the Tung Yi Trust Company (通易信托公司), two of the survivers of the 1921 catastrophe, continued to make steady progress, and in 1928 the Kuo An Trust Company was established, with a capital of Tls. 100,000, its chief business being real estate with a banking department

attached. Two years later three more trust companies were established, the China Trust Company (中國信托公司) the Shanghai Trust Company (上海信托公司), and the Heng Hsin Trust Company (恆信信托公司), and in the following year the South Eastern Trust Company (東南信托公司)) and Tung Wei Trust Company (惠通信托公司) opened business. At the same time, many of the leading Chinese banks established separate departments to handle trust business.

All the trust companies in Kiangsu Province are established in Shanghai. There are nine Chinese trust companies, eight foreign concerns, and ten commercial banks maintaining trust departments as shown in the following table:—

CHINESE TRUST COMPANIES

Central Trust Company	1921	$3,000,000	Trust, banking; savings & insurance.
Tung Yih Trust Company	1921	2,500,000	Banking, security, savings, insurance, safe-deposit, & warehousing.
[illegible]an Trust Bank	1928	₮ 100,000	Banking & real estate.
China Trust Company	1930	$1,000,000	Banking & trust.
Heng Hsin Trust Company	1930	750,000	Banking & trust.
Shanghai Trust Company	1930	300,000	Trust, banking, real estate, insurance, securities, safe-deposit, travel service.
Southeastern Trust Co.		1,000,000	Securities.
Tung Wei Trust Company		1,000,000	Trust, securities, real estate & safe-deposit.
Chung Kuo Ching Chi Trust Co. (中國經濟信託公司)	1932	——	——

CHINESE BANKS WITH TRUST DEPARTMENTS

Sin Hua Trust & Savings Bank	Kiangsi Road
Continental Bank	Nanking Road
Shanghai Commercial & Savings Bank	Ningpo Road
National Commercial Bank	Szechuen Road
Chekiang Industrial Bank	Peking Road
Bank of East Asia	Szechuen Road
Manufacturers' Bank of China	Hankow Road
China State Bank	Ningpo Road
China Industrial Bank	Peking Road
Women's Commercial & Savings Bank	Nanking Road
Bank of China	Jinkee Road

FOREIGN TRUST COMPANIES

Raven Trust Co.	American	1914	$ 1,200,000
International Investment Co.	British	1930	₹3,500,000
Yangtse Finance Co.	"	1931	₹6,000,000
Union Mobiliere	French	1920	$ 500,000

SCOPE OF BUSINESS

The business of the trust companies is not so limited as their name would suggest, and many of them handle almost every description of financial transactions. Most companies have a commercial banking department which receives deposits of every kind on current account and fixed deposit, and makes loans, discounts bills, and sells and buys securities, currencies, etc, with savings accounts given interest at the same rates as savings-banks give. Current account savings bear 4 to 4½ per cent per annum, and fixed deposits 7 per cent per annum, and higher for longer periods. Some companies, have an insurance department which handles fire, marine, life, accident, automobile, plate glass, and other forms of insurance.

Trust services, the principal and proper business of these companies, includes a wide range of activities. The more important are administration of property on behalf of individuals or public bodies, buying and selling of securities on behalf of clients, buying, selling, or acting as agent, in real estate business on behalf of clients, underwriting issues of stock and bonds, investigating and planning new enterprises, executing legal formalities, and safe-deposit business.

CHAPTER IV

PUBLIC ASSAY OFFICES AND SILVER SMELTING SHOPS

THE WORK of a public assay office (Kungku Chu 公估局) is to determine the weight and fineness of sycee, and these offices are established by permission of the Government and with the approval of the local Bankers' Association. Their number is limited to one in each locality, and in Kiangsu Province Shanghai is the only city where there is such an establishment.

The Shanghai Public Assay Office, now situated on Ningpo Road, was established about 1875 and prior to its opening the work of assessing sycee was done by experts in the employ of various cash-shops.

Sycee imported into Shanghai from other places and that turned out by the local smelting shops must be passed by the Public Assay Office before being put into circulation. This office is a very simple organization, seven or eight men being employed to determine the weight of "shoes" and a similar number of experts testing the fineness of the silver. Little equipment is needed, and consequently the Public Assay Office requires only a small capital, but it has to deposit 70,000 taels with the local Native Bankers' Association as security against any mistake made in assaying "shoes."

When "shoe" has been tested and passed, a mark is made on the middle of it. The standard fineness is 935, and shoes of lower fineness are very rare, but practically all sycee assayed in Shanghai is marked from 2.65 to 2.75 premium. The standard weight of a "shoe" is 49.80 chauping taels, and a premium of 0.05 is marked on any "shoe" above standard weight. "Shoes" of a fineness or weight more than tael below standard are not marked and are either sent back to the shippers or refined in the local smelting shops.

For assaying and marking a "shoe" turned out by local smelting shop, a fee of 0.02 is charged, but on silver imported from other ports, 0.024 tael is charged. As this fee constitutes the only income of the Assay Office, its prosperity is entirely dependent upon the number of "shoes" assayed. Formerly, when sycee was one of the principal forms of currency in Shanghai, about 2,000,000 "shoes" were tested and marked by the Public Assay Office annually, but with sycee now scarcely used in business transactions, the number has dwindled to only a few thousand every month, and the Assay Office is able to carry on simply because its expenses for upkeep are so low.

SILVER SMELTING SHOPS

Smelting shops are where "shoes" or sycee are made. In the North, they are called "loofangs" (爐房), while in Kiangsu Province they are known as "yinloo" (銀爐). Activities are not limited in the North to the casting of "shoes," but extend into the field of banking, as smelters receive deposits, make loans, and render many other services usually performed by a bank, in places where there is no public assay-office, a smelting-shop guarantees the fineness and weight of sycee put into local circulation. In Kiangsu Province, however, the "yinloo" are established by native bankers, and the sole business done is casting "shoes" for local circulation.

All the smelting shops in this Province are established in Shanghai. Towards the end of the Ching Dynasty, a Government "yinloo" was established in the Taotai's Yamen. Later, when commerce in the Settlement began to grow in volume, a number of "yinloo" came into existence, and the "shoes" turned out by them were called *yi chan hsin* (夷場新) as distinguished from *Haikuantao yuan pao* (海關道元寶), the product of the Government establishment. At present there are 26 silver-smelters in Shanghai, mostly situated in the Peking and Tientsin Roads, in the International Settlement.

A Shanghai smelting shop is a very simple affair, operating on a capital of from $2,000 to $5,000, large financial resources not being necessary, as a shop does not produce sycee on its own account. Under the manager about 25 workers are employed, of whom about two-thirds are engaged at the furnaces.

"Shoes" are cast for cash-shops and banks, which send silver bars, imported sycee, or silver coins to a smelting shop for the latter to make into Shanghai sycee. A smelting shop usually has seven or eight small furnaces and when casting a definite quantity of silver, equivalent in weight and fineness to a "shoe" of Shanghai sycee, is placed in a crucible and melted, poured into a mould, and the "shoe" is formed. Silver bars and imported sycee are made into "shoes" at the larger works. After the silver sent in by a cash-shop or bank is made into Shanghai sycee, the "shoes" are delivered to the client.

The shops charge no fee for melting silver into Shanghai sycee, obtaining their profit from the difference in fineness between the various grades of silver sent in by cash-shops and banks and the Shanghai sycee. Sycee imported from Kiangsi, Hunan, Szechuan, Tientsin and Manchuria always contains a little gold, and a smelting shop can usually make a profit of 50 cents per shoe by simply recovering the gold content of each imported "shoe" before melting into Shanghai Sycee. The same is true though to a smaller extent with silver bars from American and European ports and old silver dollars, but imported sycee and old silver dollars are becoming rare, and smelting shops in Shanghai are now principally engaged in melting silver coins from other parts of the country into sycee, and owing to keen competition in this field, the profit is small.

CHAPTER V

PAWNSHOPS

FROM TIME inmemorial pawnshops have taken an important part in the economic life of the masses in China. Small sums are advanced on almost any article, and the clients of these places are mostly from the working class and persons of limited means. Sometimes, however, even the well-to-do make use of pawnbrokers to obtain financial accommodation which is urgently needed, because of the very simple procedure involved in raising money this way.

Pawnshops are found everywhere in Kiangsu, even the smallest towns and villages having one or two such establishments. According to their different business practices pawnshops in Kiangsu—as in other parts of China—may be divided into five groups. The *tien* (典) and *tang* (當), the most important, really belong to the same class, and are classified into first class *tang* (一等當), second class *tang* (二等當), third class *tang* (三等當) and fourth class *tang* (四等當) etc. Pawnshops with a capital of over $150,000 belong to the first class, those with from $100,000 to $150,00 constitute the second, while those capitalized at over and under $50,000 form the third and fourth classes respectively.

The *ya* (押) is another class of pawnshop, with a smaller capital than the *tien* and *tang*. In Shanghai, for instance, pawnshops capitalized at over $30,000 are classified as *tien* or *tang*, while those with smaller resources are classed as *ya*.

The *chih* (質), a third group, is smaller than the *ya*, having capital ranging from a few thousand dollars to $10,000. In the *tien* or *tang* class the time-limit for

redeeming pledges is longer than any other class, but in the *chih* the limit is shorter than in the *ya* class. In the *tien* or *tang* there are regulations governing the fees charged in accepting pledges, while in the *chih* class no such regulations are observed.

The *tai pu* (代步) pawnshops are much smaller than the *tien*, *ya* or *chih*, found usually in small towns and villages, and may be divided into *pen tai* (本代) and *ke tai* (客代), the former being more or less a branch of the *tien* or *tang*, while the latter organizations are financed by various *tien* and *tang*. Before starting business the *ke tai* have to make a contract with *tien* or *tang*, whereby terms are fixed upon which advances may be made and it is usual to settle accounts with their principals at the end of each month. In Kiangsu there are many *tai pu* pawnshops, and in town of Luho (六合), there are three, funds being supplied from a *tien* or *tang* in Chinkiang. The *tai pu* usually charge a higher rate of interest on advances, and after accepting pledges from clients turn these securities over to their principals at a better rate, in which case the *tai pu* charge commission. Regarding the disposal of unredeemed pledges, the *tai pu* take a larger share of the proceeds than their principals, the sum being divided usually at 60 and 40 per cent respectively.

The *hsiao ya tien* (小押店), or small pawnshops, are the most modest concerns of all, working on a capital ranging from $100 to $300. They conduct their small transactions rather secretly, and in accommodating the poorest will accept as a pledge even a pair of worn stockings or old shoes. They charge a very high rate of interest, and three months is the limit for redemption. They charge a very high rate of interest, and one month's interest being charged for the slightest overstepping of the mark. A pledge made in the morning and redeemed the same afternoon has to pay one month's interest.

As already mentioned, pawnshops of one class or another are found everywhere in Kiangsu, varying in size with the prosperity of the locality. In business centers and seaports large pawnshops are usually found, though small ones are also operating, while in remote towns and

villages only the smaller concerns are found. The following table shows the distribution of pawnshops throughout the Province, with details of their capital and other business particulars:—

	No.	Total Capital	Annual Turnover	Class	Principal Pledges	Clients
Shanghai	500	Other details unknown				
Wusih	31	$1,276,600	$2,155,000	tien	Any kind	——
Kaiting	3	87,000	489,000	tien	Clothing, jewels, brass and iron goods, cereals	Farmers 60% merchants, 10%, workers, 5%, others 25%.
Ihsing	2	150,000	290,500	tien	Any kind	Farmers, 80% others, 10%. merchants, 10%
Luho	3	19,200	170,000	tai pu	Any kind	——
Kunshan	4	159,000	419,000	tien	Clothing & jewels	Farmers 60%. others, 30%. workers, 10%
Taitsang	10	314,000	530,000	7 tien 3 tai pu	Clothing, cotton, rice	Farmers, 80% others, 20%.
Wuchin	16	681,000	1,630,000	tien	Clothing, jewels. cereals.	——
Nanking	12	1,378,000	2,740,000	4 tien 8 tai pu	Clothing, jewels	——
Chinkiang	9	532,000	1,899,000	tien	Clothing, jewels	——
Tanyang	6	406,000	650,000	chi	Clothing, jewels	——
Liyang	3	30,000	460,000	tien	——	——
Chintan	2	85,000		chi	——	——
Lishui	1	100,000	200,000	chi	Clothing, jewels	Farmers and merchants
Icheng	1	100,000	600,000		Clothing, jewels	Mostly farmers

WORKING ORGANIZATION

The business organization of a pawnshop usually consists of four departments, the *nei chueh* (內缺), *kui chueh* (櫃缺), *chung chueh* (中缺) and *hsueh chueh* (學缺). In the *nei chueh* there are at least four responsible persons, of whom the cashier or accountant is the most important. Next to him comes the *pao fang* (包房), whose

duty is to keep check on the pledges, fix the due date for redemption, calculate interest due, and keep an inventory of unredeemed pledges. A third important person is the *chien fang* (錢房), his main duty being to handle all cash transactions during the day, while the *shih fang* (飾房) is responsible for all silver and gold articles and jewels.

In the *kui chueh* department there are *tou kui* (頭櫃), *er kui* (二櫃), *san kui* (三櫃), etc., their duty being the appraising and handling of pledges offered, and the making of daily reports to the bookkeeper.

The personnel of the *chung chueh* department consists of the *hsieh piao* (寫票) or ticket writer, *cheng chuan pao* (正捲包), *fu chuan pao* (副捲包), *tsing piao yuan* (清票員), and *kua pai yuan* (掛牌員) or labels. The duty of the *hsieh piao* is to write out the pawn-ticket and make proper registration of its issue in the books, while the *cheng chuan pao* packs up the pledged articles and puts them away safely. The *tsing piao yuan* handles redeemed pledges, and at the end of each month they classify the redeemed tickets and instruct the *kua pai yuan* and apprentices to make out a duplicate list. The duty of a *kua pai yuan* is to look after the *mu pai* (木牌) placed on pledges, indicating details of registration.

In the *hsueh chueh* departments apprentices discharge miscellaneous duties not strictly belonging to any particular department.

Salaries of pawnshop employees vary greatly according to the standing and scope of the establishment. Generally speaking, the monthly pay of the manager of an ordinary pawnshop is $10, that of *pao fang*, $8; *chien fang*, $7; *shih fang*, $6; *kui tou*, $5; *erh kui*, $4; *san kui*, $3; *hsieh piao*, $3; *chuan piao*, *tsing piao* and *kua pai yuan*, $2 each and of apprentices, from $1 to $2 each. But salary does not represent the whole increment, and there is considerable distinction made in the apportionment of various additional allowances.

For example, in accepting wearing apparel from clients, the pawnshop usually charges *chun siang chin* (存箱金) of which fee 25% is given to those actually handling the transaction, while the remainder is distributed among the staff at the end of each month. According to the practice of Shanghai pawnshops, *chun siang chin* is divided into 30 shares, apportioned as follows: Accountant, 3½, *pao fang*, 3½, *chien fang*, 2½, *shih fang*, 2, *kuei yuan*, 6, *hsieh piao*, 2, *chuan pao*, 3½, *tsing piao*, 1½, *ku pai*, 1½, *and* apprentices, 4 shares.

Again, 8% of the profit made on the sale of unredeemed pledges is called *huo yung chin* (貨用金), and is divided among the staff in the same manner as the *chun siang chin*, while 2% of the profits made on the monthly interest is known as *kou li chin* (扣利金), and is also distributed in varying manner according to local custom.

On every dollar's worth of property pledged or redeemed a charge of 0.1% and 0.3% is imposed respectively, known as *kuei hsih*, (櫃息), and goes exclusively to those actually doing the business with the articles concerned.

After deducting miscellaneous expenses of management and interest on all shares, the remaining profit of a pawnshop is distributed as follows: accountant, 4½, *pao fang*, 4, *chien fang*, 3½, *shih fang*, 3, *kuei yuan*, 4½, *hsieh piao* or pawn ticket writer, 2, *chuan piao*, 1¾, *tsing piao*, 1½, apprentices, 3, and cook and watchman, 1 share.

BUSINESS PRACTICES

The practice followed by pawnshops in Kiangsu in doing business is more or less the same all over the Province, with slight changes in accordance with local custom. and the the following brief description of business methods applies very generally:—

Variety of Pledges.—Articles accepted as pledges may be grouped under five main headings: jewels, gold and silver watches and clocks; furs; clothing; metal wares, and cumbersome articles such as funiture, etc. All these

articles are stored in separate rooms. In Kiating and Taitsang pawn brokers accept farm products as security for monetary accommodation, but special arrangements regarding interest and date of redemption are made.

Valuation of Pledges.—The methods of arriving at a valuation of pledges are anything but uniform. The value placed on an article by the *ya* class of pawnshops is usually higher than that of the *tien* or *tang* class. According to business practice in the *tang* class, the value an article offered in pledge is 60% of its market price. Gold and silver naturally rank first in valuation, with jewels next, followed by furs. Cotton piecegoods and clothing materials are not regarded as pledges of high value, being subject to changes in fashion, while cumbersome articles are usually not favored by pawn brokers.

Rate of Interest.—Interest varies from 1.8 to 2 per cent per month. The rate charged by the *ya* class is higher, varying with the amount of loan, the scale being as follows: over $5, 1.8% between $3 and $5, 2% between $2 and $3, 3%; and below $1, 4.5% per month.

Time Limit for Redemption.—The *tien* class of pawnshops allow a longer limit for redemption, pledges of any kind being redeemable within 18 months from date of pledging, while the *ya* class allows from 6 to 14 months for redemption. In the *tien* or *tang* class five day's grace are allowed for redemption of pledges of any kind, any excess being penalised with one month's interest. The time limit may be extended for several months provided interest is fully paid in advance. Interest paid for an extension of six months is called *tuan li* (短利) or "short interest," while that for 18 months' extension is known *chang li* (長 利) or "long interest."

Disposal of Unredeemed Pledges.—In the *tien* or *tang* class disposal of unredeemed pledges is semi-annual, while in the *ya* class this is done every month. Intending purchasers must notify the pawnbroker and when the due date arrives has to take delivery. In the *tien* class of pawnshops, before the day fixed for disposal, the accountant makes out an inventory of unredeemed pledges and their value, the selling price being fixed at 10% above their appraised value.

Business Hours.—The hours of pawnshops vary with the locality in which they are situated. In Shanghai, for instance, the working day may be from 7 a.m. to 7 p.m. or from 8 a.m. to 8 p.m., the former being common among the *tien* or *tang* pawnshops, while the *chih* and *ya* class keep the later hours. In Chinkiang the business hours of pawnshops are from 9 a.m. to 4 p.m.

Pawning.—When a client hands in an article to be pawned, it is first examined by the appraiser at the counter, who, finding the pledge acceptable, gives a description of the article and the amount to be advanced thereon to the ticket-writer. At the same time the appraiser enters the pledge in his book and fills up a slip of paper with which to label the article. The ticket-writer then hands the client a pawn ticket with the cash, and the article pledged is labelled and stored away. The pawnticket is usually written out in a system of "shorthand" or abbreviated script which is readable only to the employees of the shop taking the pledge.

Redeeming.—In redeeming a pledge the client has to present the pawnticket to the appraiser, who on receiving the interest and principal gives the ticket to an apprentice, whose duty it is to fetch the article from the storeroom and hand it back to the owner.

Lost Tickets.—If a pawnticket is lost, the owner must give the date of the pledge and a description of the security before receiving a duplicate ticket, and the signatures of two guarantors are required. In issuing a new ticket the pawnshop charges a fee varying from 5 to 10 per cent of the amount originally advanced.

Closing Accounts.—At the end of the day the appraiser at the counter has to submit a statement to the cashier or accountant, and the ticket-writer and *tsing piao* submit to the cashier their daily reports. From these three statements the accountant makes out his report for the day.

TAXES ON PAWNSHOPS

Pawnshops in Kiangsu have to pay registration and license fees and business-tax. The cost of registration charged by the Finance Department of the Kiangsu provincial government varies with the capital, the scale being as follows: over $150,000, $500; over $100,000, $300; over $50,000, $250 and below $50,000, $200. The license fee is uniform throughout the province at $75 per annum, and must be paid at beginning of a year.

LIST OF PAWNSHOPS

The following is a list of pawnshops operating in the Province (Shanghai excluded) together with their year of establishment, capital and annual business turnover:—

		Established	Capital	Annual Business Turnover
Wusih:				
Yu Yuan	(裕源)	1904	$ 44,000	$ 80,000
Kung Shun	(公順)	1889	42,000	80,000
Tsi Tung	(濟通)	1875	40,000	90,000
Ho Tsi	(和濟)	1896	65,000	120,000
Pao Kang	(保康)	1882	47,500	80,000
Hui Tung	(惠通)	1899	35,000	80,000
Pao Hsing	(保興)	1904	40,000	80,000
Pao Jen	(保仁)	1896	75,000	120,000
Jui Ta	(瑞大)	1914	20,000	50,000
Pao Tai	(保泰)	1875	40,000	100,000
Chun Hua	(春華)	1875	43,000	60,000
Pao Lung	(保隆)	1894	20,000	60,000
Tung Ho	(同和)	1929	55,000	80,000
Tung Tsi	(同濟)	1923	14,000	50,000
Tung Yuan	(通源)	1875	12,000	50,000
Tsi Heng	(濟恒)	1924	15,000	35,000
Yung Hsing	(永興)	1901	4,500	50,000
Yung Yu	(永裕)	1875	100,000	200,000
Yung Feng	(永豐)	1929	13,000	40,000
Pao Ho	(保和代)	1889	10,000	50,000
Pao Ho	(保和)	1891	38,000	80,000
Pao Cheng	(保誠)	1908	10,000	46,000
Pao Chang	(保昌)	1897	10,000	50,000
Pao Yuan	(保源)	1899	17,000	45,000
Yuan Chi	(元吉)	1875	45,000	85,000
Ta Chen	(大成)	1927	30,000	50,000
Tsi Yuan	(濟源)	1875	4,000	30,000

Chen Teh	(成德)	1889	10,000	50,000
Yuan Tsi	(元濟)	1890	6,400	40,000
Po Hsing	(溥興)	1897	5,000	20,000
Hsieh Shen	(協順)	1922	8,000	40,000
Yu Tsi	(裕濟)	1931	40,000	——
Tsi Shun	(濟順)	1875	50,000	80,000
Luho:				
Heng Tai	(衡太)	1928	7,200	60,000
Fu Tai	(福太)	1926	10,000	70,000
Teh Tai	(德太)	1913	2,000	40,000
Ihsing:				
Tai Lai	(泰來)	1912	80,000	160,000
Tai Chen	(泰成)	1912	60,000	130,000
Kiating:				
Heng Hsing	(恆興)	1926	12,000	120,000
Chia Chang	(洽昌)	——	35,000	160,000
Fu Chang	(福昌)	——	40,000	200,000
Kunshan:				
Pao Chen	(寶成)	1875	50,000	95,000
Pao Yuan	(寶源)	1868	80,000	190,000
Kung Ho	(公和)	——	15,000	40,000
I Tai	(益泰)	1886	24,000	54,000
Taitsang:				
I Tsi	(益濟)	1925	24,000	60,000
Tsi Mou	(濟茂)	1885	44,000	90,000
Chang Tai	(昌泰)	1916	26,000	80,000
Feng Mou	(豐茂)	1892	40,000	90,000
Tsi Tai Tung	(濟泰東)	1868	40,000	100,000
Ta Feng	(大豐)	1895	60,000	110,000
Tai Chang—Agent	(泰昌代當)	——	2,000	——
Kung I—Agent	(公益代當)	——	2,000	——
Tai Sheng—Agent	(泰盛代當)	——	2,000	——
Kiangning:				
Kung Tsi	(公濟)	1914	500,000	660,000
Hsieh Tsi	(協濟)	1915	300,000	600,000
Hui Tsi	(會濟)	1916	300,000	600,000
Tung Tsi	(通濟)	1921	220,000	540,000
Tung Tsi	(同濟)	1916	10,000	100,000
Lung Tsi	(隆濟)	1919	10,000	100,000
Wo Tsi	(和濟)	1919	10,000	100,000
Jen Tsi	(仁濟)	1927	10,000	100,000
I Tsi—Agent	(益濟代當)	1920	2,000	——
Yi Tsi—Agent	(亦濟代當)	1921	3,500	——
Shun Tsi—Agent	(順濟接當)	1923	400	——

Wuchin:				
Shin Chen	(信成)	1877	40,000	300,000
Heng Chun	(恒春)	1920	30,000	250,000
Teh Yuan	(德源)	1872	30,000	200,000
Teh Yuan Branch	(德源分典)	1920	20,000	150,000
Tsi Heng	(濟恒)	1871	60,000	350,000
Chiu Feng	(久豐)	1870	50,000	180,000
Yung Ta	(永大)	1881	66,000	350,000
Yi Tai	(亦濟)	1870	40,000	120,000
Yi Tsi Branch	(亦濟分典)	1889	35,000	120,000
Yung Tsi	(永濟)	1899	30,000	150,000
Heng Yuan	(恒源)	1927	70,000	300,000
Tsi Ho	(濟和)	1870	30,000	160,000
Hsieh Lung	(協隆)	1923	30,000	140,000
Shen Heng	(慎恒)	1916	40,000	140,000
Heng Feng	(恒豐)	1924	60,000	250,000
Ho Feng	(和豐)	1876	50,000	150,000
Chinkiang:				
Yu Tai	(裕泰)	1916	100,000	300,000
Yu Chang	(裕昌)	1930	70,000	300,000
Chung Yu	(忠裕)	1882	80,000	300,000
Chi Heng	(鑑恒)	1930	60,000	300,000
Heng Ho	(恒和)	1930	60,000	300,000
Ho Yu	(和裕)	——	55,000	——
Sung Mou	(松茂)	——	22,000	——
Tse Chen	(集成)	——	30,000	——
Tung Tsi	(同濟)	——	50,000	——
Tanyang:				
Tai Hsing	(泰興)	1910	80,000	120,000
Wei Chang	(匯昌)	1884	50,000	110,000
Tai Yu	(泰裕)	1909	76,000	130,000
Tai Yuan	(泰源)	1910	100,000	130,000
Pu Hsing	(阜興)	1883	60,000	80,000
Yung Kang	(永康)	1908	40,000	80,000
Chintan:				
Po Yuan Yu Chi	(博源裕記)	1882	45,000	210,000
Yi Chang	(義昌)	1882	40,000	160,000
Liyang:				
Jui Wo	(瑞和)	1906	20,000	160,000
Yi Yuan	(義源)	1919	40,000	200,000
Wei Kang	(蔚康)	1917	20,000	140,000
Yin Chi	(王吉)	1894	——	170,000
Tai Feng	(泰豐)	1884	60,000	140,000
Ho Tsi	(和濟)	1919	60,000	150,000

Lishui:				
Tsi Chen	(集成)	1917	100,000	200,000
Icheng:				
Chao Ta	(肇大)	1874	100,000	100,000
Changshu:				
Heng Teh	(恒德)	1896	45,000	95,000
Shih Tai	(時泰)	1869	60,000	90,000
Shih Heng	(時亨)	1873	35,000	90,000
Yung Lung	(永隆)	1870	33,000	80,000
Shin Tai	(信泰)	1873	30,000	70,000
Heng Mou	(恒茂)	1896	40,000	70,000
Yuan Hsing	(元興)	1872	49,000	70,000
Tung Feng	(同豐)	1932	40,000	60,000
Wuhsien:				
Tung Shun	(同順)	1907	60,000	90,000
Fu Yuan	(福源)	1881	38,000	55,000
Yu Yuan Branch	(裕源分)	1876	40,000	80,000
Heng Ta	(恆大)	1924	60,000	90,000
Ko Ta	(可大)	——	20,000	48,000
Hung Yuan	(宏源)	1916	30,000	50,000
Tung Yuan	(同源)	1894	24,000	40,000
Pao Yuan	(保源)	1904	30,000	50,000
Yu Chang	(豫昌)	1884	40,000	90,000
Yu Chang Branch	(豫昌分)	1911	40,000	84,000
Hung Sheng	(洪盛)	1910	40,000	75,000
Hung Chang	(洪昌)	1906	50,000	80,000
Yung Ta	(永大)	1876	34,000	75,000
Pao Yu	(保裕)	1892	20,000	90,000
Hsiang Ta	(祥大)	1923	40,000	90,000
Tai Heng	(泰亨)	1894	45,000	90,000
Yu Yuan	(裕源)	1890	40,000	96,000
Yuan Kang	(源康)	1925	40,000	60,000
Yuan Chang Cheng	(元昌正)	1881	54,000	100,000
Fu Tai	(福泰)	1875	40,000	80,000
An Tai	(安泰)	1885	40,000	60,000
Pao Ta Branch	(保大分)	1914	50,000	10,000
Yuan Chang Branch	(元昌分)	1884	33,000	70,000
Ta Shun	(大順)	1905	50,000	120,000
Ta Yu	(大裕)	1890	45,000	60,000
Yung Yu	(永裕)	1916	30,000	36,000
Yu Yuan	(裕源)	1873	40,000	69,000
Yuan Heng	(元亨)	——	20,000	48,000
Yuan Yuan	(源源)	——	24,000	50,000
Tsung Teh	(崇德)	1920	40,000	50,000

Tse Hsiang	(致祥)	1869	40,000	90,000
Shun Hsing	(順興)	1882	60,000	100,000
Ta Teh	(大德)	——	40,000	90,000
Mou Yuan	(茂源)	1910	28,600	70,000
Tai Ho	(泰和)	1906	50,000	55,000
Ting Ho	(鼎和)	1910	60,000	100,000
Tung Ho	(同和)	1868	44,000	80,000
Tung Feng	(同豐)	1867	45,000	70,000
Tung Tai	(同泰)	1867	44,000	60,000
Tung Chang	(同昌)	1872	30,000	100,000
Hsien Ta	(咸大)	1881	12,000	43,000
Tung Yu	(同裕)	1868	45,000	50,000
Pao Ho	(保和)	1894	14,000	40,000
Tsingkiang:				
Ching Yue	(慶餘)	1914	80,000	100,000
Taihsien:				
Heng Tai	(衡泰)	1882	40,000	100,000
Nantung:				
Chien Ho	(謙和)	1911	50,000	120,000
Ting Tai Yuan	(鼎泰源)	1914	60,000	150,000
Tai Hsiang	(泰祥)	1912	80,000	220,000
Hsu San Pan	(徐三本)	——	80,000	240,000
Teh Lung	(德隆)	1903	50,000	140,000
Shou Feng	(壽豐)	1913	40,000	110,000
Hsu Hu Yuan	(徐洽源)	1896	70,000	180,000
Yuan Chang	(源昌)	1917	50,000	110,000
Teh Yuan	(德源)	1914	60,000	160,000
Tung Yu	(通裕)	1912	50,000	120,000
Chi Hsiang	(吉祥)	1916	60,000	160,000
Tung Tsi	(通濟)	1907	80,000	300,000
Wo Kang Tai	(和康泰)	1927	10,000	500,000
Wan Lung Teh	(萬隆德)	1924	50,000	200,000
Chitung:				
Heng Tai	(恒泰)	——	80,000	200,000
Ta Lung	(大隆)	——	20,000	100,000
Haimen:				
Ho Tsi	(和濟)	——	46,000	180,000
Chia Chang	(洽昌)	——	40,000	100,000
Yu Ta	(裕大)	——	40,000	180,000
An Tsi	(安濟)	——	80,000	170,000
Chung Hung	(中亨)	1912	60,000	100,000
Kung Tsi	(公濟)	1908	30,000	70,000
Paoying:				
Chia Tsi	(洽濟)	1930	97,000	250,000
Tungtai:				
Ting Tai	(鼎泰)	——	15,000	50,000
Heng Shun	(恒順)	——	12,000	40,000

Taihsing:				
Chang Chi	(長吉)	1929	50,000	170,000
Jen I	(仁益)	1875	50,000	200,000
Huan Hsing	(環興)	1902	35,000	150,000
Hsieh Tai	(協泰)	1931	50,000	180,000
Tai Heng	(泰恆)	1875	40,000	150,000
Tung Teh	(同德)	1931	40,000	170,000
Heng I	(恆益)	1875	50,000	220,000
Lu Heng	(履恆)	1861	50,000	200,000
Tung Heng	(同恆)	1929	50,000	180,000
Yue Hsing	(悅興)	1875	50,000	200,000
Paoshan:				
Chi Hsiang	(志祥)	1911	20,000	50,000

CHAPTER VI

EXCHANGES

THERE ARE six exchanges operating in Kiangsu Province, all situated in Shanghai, the commercial and financial center of the country. At these exchanges buyers can effect purchases and sellers dispose of certain commodities having a recognised standard in large quantities and at publicly determined prices. The lines traded in include securities, bullion, and produce, the last-named including cotton, yarn, flour, cereals, etc.

The first Exchange—using the term in its present-day sense—was the Chartered Produce and Stock Exchange, organised in 1919, although a law governing the operation of exchanges was promulgated in 1914. This was the first exchange to be established exclusively by Chinese with Chinese capital, though the Shanghai Sharebrokers, Association (later reorganised into the Shanghai Stock Exchange) had been in existence for over two decades. The Exchange, after operating for half a year, made profits amounting to over $500,000, and in the same year the China Merchants Stock Exchange, the Flour Exchange, the Cereal, Beanoil and Beancake Exchange, and Chinese Cotton Goods Exchange were all opened in quick succession. All these Exchanges did good business, and their stock went up to almost incredible figures, and the swift prosperity which followed their appearance induced many to start similar enterprises, so that within half a year no less than 140 exchanges of all descriptions, and all with big capital, were established in Shanghai. The craze quickly spread to other places, such as Hankow, Tientsin, Canton, Nanking, Soochow, Ningpo, etc., though exchanges there sprang up only in small numbers, but the whole movement was unhealthy, as promoters started these enterprises not to meet the public need and serve the business community, but simply as a means to get rich quick. Instead of their dreams coming true a collapse began, and suspensions of

business or liquidations were reported almost daily toward the end of the year. In the spring of 1922 only 12 exchanges were still operating, and of these today only the following six survive.

Chartered Stock and Produce Exchange—This Exchange was opened in 1920 with a capital of $5,000,000. The number of members, or brokers, was limited to 50 for each commodity traded in, which according to the regulations, consists of seven categories: securities, cotton, cotton yarn, cotton goods, bullion, cereals and oils, and furs and skins. Actually, however, only gold bars, cotton, and cotton yarn were handled, and in 1929 the scope of business was further limited to transactions in securities and gold bars. According to an official report issued by the exchange, commissions received from brokers during the first half of 1932 amounted only to $92,265, and the net loss for the period was $173,799, but this period was exceptional, owing to Sino-Japanese hostilities paralysing business for several months. In 1931 the Exchange was ordered to incorporate its security department into the China Merchants Stock Exchange, but settlement of the terms of this merge has not yet been reached.

Chinese Cotton Goods Exchange—This Exchange was opened in July, 1931 with an authorised capital of $3,000,000, its operations being limited to transactions in cotton, cotton yarn, and cotton piecegoods. The quota of brokers for the first two was 80 each, and for piecegoods, 20. It is the recognised market-place in Shanghai for cotton and yarn, and the annual volume of transactions always exceeds a million bales, and once reaching the level of 7 million bales. During the last ten years the total quantity of goods changing hands on the Exchange was 46,194,100 bales, worth about Tls. 9,127,287,700. The standard is 20-count "Man & Bell" yarn, produced by the Shun Hsin Cotton Mill.

Shanghai Flour Exchange—Reorganised from the older Exchange of the China Flour Millowners Association (中國機製麵粉貿易所), this enterprise began to operate under its present name in 1921, with a capital of $500,000, in a rented part of the Chinese Cotton Goods Exchange building. Membership is limited to 55, but the

volume of transaction is increasing steadily. Flour handled on this Exchange in 1922 amounted to 79,473,000 bags, rising to 156,610,000 bags in 1926, and 295,337,000 bags in 1931. The minimum unit in trading is 1,000 bags, and the product of 12 mills is listed for trading, the most popular brands being the "Fu Lu Shou" (福祿壽), and "Warship."

Cereal, Oil, and Beancake Exchange—This was established in 1921, with a capital of $2,000,000 with 100 seats for member brokers, though the actual number operating at present is only 45. It was provided in the original regulations that all kinds of agricultural products could be traded in on the Exchange, but an amendment was made in 1924 limiting operations to Dairen soyabeans, Dairen *hung liang* (紅糧), wheat, beanoil and beancake. The average commission received by the Exchange from brokers annually is over $200,000.

China Merchants Stock Exchange—This is the center of the securities market of Shanghai, and, in fact, of the country. It was reorganised from the Shanghai Share-brokers Association, and its paid-up capital is $1,000,000. All Government Bonds and Treasury Bonds are listed for trading, and occasionally the stock of certain banks and companies are handled. Membership is limited to 55, and the seats are all taken. The commission received from brokers during the first half of 1932 was only $77,000, and the net profit only about $2,000, the reason for this poor showing being that operations were suspended for about three months because of the hostilities in Shanghai, and the collapse of the market as the result of the local fighting.

The Gold Stock Exchange—This was formerly known as the Shanghai Gold Guild (上海金業公會), and was reorganised in 1921 with a paid-up capital of $1,500,000. Four varieties of gold are listed for trading—gold ore, gold bullion and coins, gold bars, and Chinese pure gold, but actually gold bars are the only commodity bought and sold on the Exchange. Bars are 978/1000 fine, and the unit of trading is seven bars, weighing 10 *liang* (*tsao ping*) each. Forward transactions are limited to two months. There are at present 138 members in the Exchange, and most of the business done is pure speculation, but the volume is considerable, and profits handsome.

Results for the first half-year in 1932 were not satisfactory, being affected by the suspension of business during the Shanghai hostilities. The commissions received from brokers during 1930 amounted to $363,259, and the profit was $181,679, while for the first six months of last year, commission received was only $108,134, and a net loss of $63,000 was incurred.

COMMODITIES TRADED IN

Securities.—Although the term "security" includes Government bonds, and corporation shares and debentures, only the former are now bought and sold on the two Exchanges handling such business. Only on very rare occasions do the shares of banks or corporations change hand on these market. The securities now being traded in are:

18th Year Customs Revenue Treasury Bonds
18th Year Military Reorganisation Treasury Bonds
18th Year Troop Disbandment Bonds
19th Year Customs Revenue Treasury Bonds
17th Year Rehabilitation Treasury Bonds
20th Year Rolled Tobacco Tax Treasury Bonds
20th Year Customs Revenue Treasury Bonds
20th Year Salt Tax Treasury Bonds
20th Year Consolidated Tax Treasury Bonds
6 per cent Consolidated Bonds
96 Million Bonds

The above are all well-seasoned securities which are handled daily in large numbers. When the outstanding balance of a bond issue grows small owing to numbers being drawn from redemption from time to time, or when the face value of a treasury bond shrinks with its monthly payment of principal, both being near to complete redemption, such issues are dropped from the trading list. The 96 Million Dollars Bond, on which interest and principal has not been paid, is gradually being eliminated from the market.

Delivery of bonds may be spot or forward. Bonds sold for spot delivery must be surrendered before two o'clock in the afternoon if sale is effected in the morning, and by the following morning if sold in the afternoon. Bonds can be also for delivery one or two months forward, in the former case to be delivered at the end of the current month, and in the latter at the end of the following month.

Brokers have to put up as guarantee 200 of the Exchange's capital stock. Operators in futures working on margin must pay the broker a deposit equal to about 15 per cent of the bonds bought or sold, and amount is not definitely fixed, but an additional deposit equal to half the original deposit is required when quotations change to that amount, this extra guarantee being paid by the buyer if the price goes down, and by the seller if the market goes up. This additional deposit is refundable if quotations go back to the figure at which the order was originally executed. In the event of unusually sharp fluctuations, or when a broker has done an amount of business considerably over the usual limit, the committee may at its descretion require a special deposit to be paid by either the buyer or seller, or by both, the amount to be not more than three times the original deposit. In the case of the Chartered Exchange, the amount demanded is $2,000 or more, either in cash or in bonds or negotiable instruments approved by the Exchange, and acceptable at the market price prevailing.

Gold Bars—Two exchanges in Shanghai are handling gold bar transactions, the Gold Stock Exchange and the gold department of the Chartered Stock and Produce Exchange. The former, however, is the center of this business in the city, and its quotations are accepted as official. Fluctuations on the Chartered Exchange are dependent on the general movement of business on the Gold Stock Exchange, and the volume of business is also much smaller than in the other mart.

Gold dealt in on the Exchange must be in one of four categories, according to the regulations: Native gold (found in various places in China, of different fineness, the Three Eastern Provinces and Yunnan being the principal sources of supply), Gold bullion and coins (mostly from Japan and the United States); "Pure" or "red" gold (used in goldsmiths' shops for jewellery and decorative purposes, bought and sold in units of five bars, each weighing 10 *liang* (*tsao ping*)—and gold bars, consisting of gold of 978/1000 fineness in bars of 4" x ½" x ½", each weighing 10 tsao ping taels. Each bar bears the name

of the firm casting it and the date of casting. The unit of trading is seven bars. Of these four different categories, however, only the last is actually being traded in.

Buying or selling orders can be executed for spot or future delivery. In executing spot contracts, bars must be delivered the same day on which the sale is effected. Future business may be for one month or two months, and if agreed to by both parties, delivery may be made before the contracted date. Forward sales for the following month open on the 16th of the current month, at which date "carry overs" are effected at prices then prevailing.

Member brokers, of which the full number is 138, are required required to put up a deposit in the form of 200 Exchange shares. Operators pay the broker a commission of Tls. 10 for each bar bought or sold, the minimum being Tls. 70 for a unit of seven bars. Should the market rise by more than the amount of the deposit, the seller must put up additional security equal to the gain, and alternatively. is called upon if the market goes down. Special deposits may be required by the committee during abnormal conditions.

In effecting delivery of a forward sale, the seller must have the bars ready at the Exchange one day before the contracted date, and receipt of the bars is notified to the buyer immediately by the Exchange. The buyer takes possession next morning, and usually pays with native orders. Delivery can be also made in gold currencies, at 480 Japanese yen or $240 gold per bar.

The purchase of gold bars may be for the actual requirements of banks for shipment abroad to meet certain payments or as a means of minimising risk in exchange operations, but as a matter of fact, the bulk of the business done on this Exchange is mere speculation. From the opening of the session at about nine o'clock in the morning, and again at two o'clock in the afternoon, trading goes on continuously for nearly three hours. A buyer can sell what he has bought the same day or even during the same session if the price has gone up, while a seller can cover his position if the market goes down, making a profit from the difference in prices quoted within a few hours or sometimes minutes.

Produce—(1) Cotton and Cotton Yarn—There used to be two marts where cotton and cotton yarn were handled—the produce department of the Chartered Produce and Stock Exchange and the Chinese Cotton Goods Exchange. Only a small amount of business was done at the former place, however, and transactions have been suspended since June, 1929, the Cotton Goods Exchange being at present the only market for cotton and yarn in the country.

Three articles are listed for trading on the Exchange—cotton, yarn, and cotton cloth, but in the last-named there have not been any transactions recorded. Of the other two items, yarn is handled in much larger volume. Future transactions cover a period of from one to six months, and the smallest unit for yarn transactions is 50 bales each containing 40 packages), and of raw cotton, 100 piculs. In the regulations it is provided that the minimum unit for deals in cotton cloth is 10 bales each containing 20 pieces, but this rule has not been put in force as cloth is not being handled on the Exchange. Prices are quoted per bale for yarn, and per picul for cotton, and fluctuations move by 10 tael cents for yarn and five for cotton. In cash transactions delivery must be effected within five days from date of the contract, and the trading unit is smaller, being 10 bales for yarn and 50 piculs for cotton.

Unlike bonds and gold bars, which have a fixed standard of value, the quality of a certain count of yarn may for various reasons be unstable. Yarn may be spun by different mills, and therefore absolute uniformity is impossible, and the raw cotton used may be of different name quality, while the technical standard of production varies in different mills. Again, in the case of cotton transactions, Tungchow cotton may be grown from different kinds of seed, or in different localities, both factors which would affect its quality. For these reasons, a certain brand is accepted as standard in trading, and additional payments are required if the goods are above that standard, or a compensatory deduction made if below that level. The "Man & Bell" 20-count yarn produced by the Shun Hsin Mill is taken as the standard quality of 20-count yarns, and Chengchow "Si Nyon" is the standard for cotton.

A deposit of $28,000 is put up with the Exchange by members as security for each line of business handled. In placing orders with brokers, client's pay a deposit of about 30 per cent of the price, with an additional sum if the market moves up or down by an amount beyond the sum deposited. Special deposits may be called for by the Exchange when considered necessary.

Delivery must be effected one day before the last trading day of the month. The seller must notify the Exchange three days before the contracted date of delivery that the goods are stored in warehouse awaiting clearance. The seller obtains from the Exchange a certificate testifying to the quality of the goods.

Flour—The lines which may be dealt in on the Shanghai Flour Exchange are wheat flour and wheat bran, but actually only the former is handled. There is no spot business in flour, and futures may be for delivery in from one to six months. The unit of trading is 100 bags, but quotations are per bag. There are three trading sessions every morning and again in the afternoon..

The deposit required of members' of the Exchange (who number 55) is $20,000, in the form of 50 shares of the Exchange's capital stock. Buyer's or seller's deposits with brokers are $280 per 1,000 bags, to which another $140 is added when prices move up or down by over three-quarters of the original amount deposited. Wheat bran is not handled on the main floor, but in another quarter of the building, and only cash transactions are recorded, commission for each 1,000 bags changing hands being Tls. 5.

As in the case of cotton yarn, certain brands of flour, are taken as standard, and transactions in qualities inferior or superior to standard are adjusted by reducing or adding to the contract prices.

Delivery of flour by sellers must be made not later than noon on the last trading day of the month, and buyers must take delivery before five o'clock that day. The buyer is entitled to examine the flour before accepting warehouse receipts. The purchase price is paid to the Exchange when the documents are surrendered to the

buyer, and the amount is forwarded to the seller by the Exchange the following day. Should the buyer be unable to clear the flour from the warehouse, he is responsible for storage and insurance expenses.

Cereals and Oils—Items listed on the Cereal Exchange for trading include beans, wheat, oils, beancake, etc. The unit of transactions for beans, wheat, and *hung liang* (紅糧) is one carload, but prices are quoted per picul. Beancake is quoted per cake, and sold in units of 1,000 cakes. Oil is sold in 100 picul lots, quoted per picul.

Transactions may be for spot or future, the latter from one to six months, and contracts made for current month may be either for the first or second half of the month.

Deposits for margin operations are fixed from time to time, except in the case of beanoil, for which $105 is required for every 100 piculs involved.

Methods of delivery vary with different articles handled. In delivering Dairen yellow beans, the steamship bill of lading must be surrendered to the buyer, and the goods cleared from the shipping company's godown within ten days. Each "carload" of yellow beans consists of 350 bags, weighing 500 piculs gross. The method of delivering *hung liang* is similar to that followed in handling beans. A carload of *hung liang* consists of 300 or 310 bags, weighing 500 piculs gross, and the maximum difference between carloads should not exceed 15 piculs. Wheat is shipped to Shanghai either by rail or sea, and bills of lading are produced when the consignment is delivered to godown. Beans are delivered either on the 15th or at the end of the month, according to the terms of the contract, and must be cleared in ten days. In regard to beancake, the standard for current month's delivery must be equal to that of goods arriving during the last month, and must be taken from the warehouse within ten days. Settlement of all transactions is usually made by a ten-day order on a native bank.

CHAPTER VII

INSURANCE COMPANIES

SHANGHAI is the center of the underwriting business in Kiangsu Province, though insurance-companies write business in other districts through sub-agents or branches of Shanghai offices. The China Mutual Life Insurance Company, the first concern of its kind in China, was established in Shanghai in 1899, and was soon followed by many other Chinese insurance companies. The Underwriters' Association was established in 1904, since when a considerable number of insurance companies have come into existence, though some are not members of the Association. These companies do not have to observe the fixed rate of premium which is imposed upon members of the Association. The following is a list of all the Chinese insurance companies operating in Shanghai:—

	Established	Capital
Ta Hua Insurance Co. (大華保險公司)..	1927	$ 120,000
Tai Ping Fire and Marine Insurance Co. (太平水火保險公司)	1929	1,000,000
Central Trust Co., Insurance Department (中央信託公司保險部)	1921	500,000
China Insurance Co. Ltd. ..... (中國保險公司)	1931	5,000,000
Indust. Bank of China, Insurance Dept. (中國實業銀行永當保險行)	1919	1,000,000
Jen Chi Ho Fire & Marine Insurance Co. (仁濟和保險公司)	1885	1,200,000
Wing On Life Insurance Co. ..... (永安人壽保險公司)	——	5,000,000
Wing On Fire & Marine Insurance Co. (永安水火保險公司)	——	1,500,000
Yangchen and Kangnien Insurance Co. (羊城康年聯合保險公司)	1926	2,000,000
An Ping Fire and Marine Insurance Co. (安平水火保險公司)	1926	1,000,000

Sincere Life Insurance Co. ..... (先施人壽保險公司)	——	2,000,000
Sincere Insurance & Investment Co. Ltd. (先施保險置業公司)	——	1,200,000
Tung Yih Trust Co., Insurance Dept. .. (通易信託公司保險部)	1927	300,000
Hua An Fire and Marine Insurance Co. (華安水火保險公司)	——	500,000
China United Assurance Society, Ltd. .. (華安合羣保壽公司)	——	500,000
Hua Chen Fire Insurance Co. ..... (華成經保火險公司)	——	160,000
Hua Hsing Fire and Marine Insur. Co. (華興水火保險公司)	——	200,000
Ningpo Shaoshing S.N., Co., Insur. Dept. (寧紹商輪公司水火保險部)	1925	250,000
Chao Tai Fire & Marine Insurance Co. (肇泰水火保險公司)	1928	1,000,000
Shanghai Trade Insur. Underwriters Co. (上海聯保水火險公司)	1915	3,000,000
Lien Tai Fire & Marine Insurance Co. (聯泰水火保險公司)	——	1,500,000
Feng Shun Fire and Marine Insur. Co. (豐順水火保險公司)	——	200,000
Pao Feng Insurance Co. ..... (寶豐保險公司)	1931	500,000
Tai Shan Insurance Co. ..... (泰山保險公司)	1932	3,000,000

In the districts of Tungshan, Wuchin, and Wusih a number of insurance companies do business, mostly through local agencies of Chinese underwriters in Shanghai.

Most of the Shanghai insurance companies are engaged in life, fire and marine insurnace, though a few also issue policies covering automobiles and plate-glass.

There are 17 Chinese and about 70 foreign underwiters in Shanghai engaged in marine insurance. Policies issued cover cargo, hull, freight, and piracy insurance. Fire insurance policies usually cover one of three risks—factory and warehouse insurance, building insurance, and merchandise and personal effects. There are 18 Chinese and about 130 foreign firms in Shanghai doing business in fire insurance.

Life insurance differs from fire and marine business in that it is not simply a precaution against a possible risk, but against a particular and definite eventuality, and at the same time is a form of thrift. A wide range of policies issued by life insurance companies, each being designed to meet a particular purpose. The following are the more important foreign insurance companies doing business in Shanghai: Sun Life Insurance Co. of Canada, The Manufacturers' Life Insurance Co., Standard Life Insurance Co., Standard Life Insurance Co., General Accident, Fire, and Life Insurance Co., San Francisco Life Insurance Co., Asia Life Insurance Co., American Asiatic Underwriters, Scottish Union & National Insurance Co., British Traders' Insurance Co., Union Insurance Society of Canton, North China Insurance Co., China Fire Insurance Co., Yangtse Insurance Association Ltd., Canton Insurance Co., Hongkong Insurance Co., China Underwriters, American Insurance Co., South British Insurance Co., and Northern Assurance Co. Ltd.

BOOK TEN

COMMUNICATIONS AND TRANSPORTATION

CHAPTER I

RAILWAYS

THE RAILWAYS operating in Kiangsu Province are the Nanking-Shanghai, Shanghai-Woosung branch line, Shanghai-Fengching, (楓涇) section of the Shanghai-Hangchow-Ningpo line, Hsuchow-Haichow section of the Lunghai Railway, and two sections of the Tientsin-Pukow Railway, the first-mentioned being the most important. The following is a brief description of each line.

NANKING-SHANGHAI LINE AND SHANGHAI-WOOSUNG BRANCH LINE

In May, 1864, twenty-four foreign business houses in Shanghai sent a petition to the Viceroy, Lord Li Hung-chang (李鴻章), asking permission to build a light railway connecting Shanghai and Woosung, but the application was not granted. In the autumn of the same year Sir MacDonald Stephenson, upon arriving in China from India made appeals to merchants in Canton to build railways which won warm moral support, but the difficulty of securing funds prevented anything more being done. Subsequently he wrote a book "Railways for China," in which he made further appeals to the Chinese Government to undertake railway construction, but gaining no support he returned home.

In 1874 Messrs. Jardine, Matheson & Company, a British concern in Shanghai, planned to build a light railway from the present Range Road to Woosung, with the object of facilitating trade at Shanghai. Mr. G. J. Morrison was engaged as chief engineer and arrived in Shanghai from London in January, 1875, bringing with him the locomotive "Pioneer" and railway construction materials. On January 20, 1876, work was started with a capital of £28,000, and a trial run was made in February. Despite an order from Mr. Y. K. Feng (馮焌光), superintendent of Shanghai Customs, to suspend operations the company continued its work, and a trip between Shanghai and

Kiangwan was made on June 20 at a speed of 25 miles an hour, the line being formally opened to traffic on July 1. Unfortunately a Chinese soldier was killed by a train on August 3rd, as a result of this accident traffic was ordered to be suspended by the Chinese authorities. Meanwhile the British agreed to let the Chinese have control of the railway for 285,000 taels, to be paid in three instalments within one year. At this time passenger trains ran seven times daily from Shanghai to Woosung, fares being as follows: First-class to Kiangwan, 50 cents; to Woosung, $1.20; second-class to Kiangwan, 25 cents; to Woosung, 50 cents; third-class to Kiangwan, 10 coppers, and to Woosung, 20 coppers. Dogs were carried at 10 cents a head for any distance. On December 20 the line came under Chinese control, but instead of continuing the service the authorities ordered the rails to be torn up, and the rolling-stock, track, etc. was transported to Formosa, where a railway was built with the material taken from Shanghai.

It was about 20 years after the destruction of the original Shanghai-Woosung line that the idea of building a railway in the vicinity of Shanghai was revived. The plan was suggested by Shen Pao-chen (沈葆楨) in 1903 of constructing a railway connecting Woosung and Nanking, and was supported by Messrs. Wang Wen Shao (王文韶) and Chang Chih Tung (張之洞), who with the financial help of the British built the Shanghai-Woosung and Nanking-Shanghai railways. Construction work was started in 1903, and in 1908 the whole tine was open to traffic.

The trunk line runs from Shanghai to Nanking, 387.130 kilometers, with 40 stations between terminals, while the branch from Shanghai to Woosung, a distance of 17.476 kilometers, connects seven stations. The length of the entire system is 404.606 kilometres.

The construction of the track cost 15,801,096 taels, but if all materials are taken into consideration, the total expenditure is put at 20,267,092 taels.

The freight carried on the Nanking-Shanghai Railway consists of agricultural products, factory goods, and minerals. The following table shows the freight carried by the Nanking-Shanghai Railway during the first seven months of 1931 and 1932, values being expressed in dollars and quantities in kilograms:—

	1931		1932	
	Quantity.	Value.	Quantity.	Value.
January	90,659,939	$173,024.24	60,176,710	$140,888.80
February	63,127,035	123,512.52	6,028,811	11,025.79
March	71,361,965	155,077.31	22,971,234	19,721.76
April	94,924,249	199,591.25	18,298,870	29,382.92
May	103,468,092	245,001.31	19,062,527	33,975.62
June	86,695,417	216,306.74	33,106,740	68,885.41
July	91,159,496	205,426.08	81,687,243	163,389.37

In regard to passenger traffic, the number of people travelling by rail was very small at the beginning, but has increased considerably in later years, as shown in the following tables:—

	Passengers.
1904	122,417
1909	3,490,125
1912	4,744,353
1921	8,579,837

	1931		1932	
	Passengers.	Revenue.	Passengers.	Revenue.
January	595,845	$522,413.29	531,251	$577,575.86
February	542,848	453,070.01	246,904	214,416.87
March	655,940	656,325.06	295,396	211,668.72
April	635,417	732,844.70	287,916	183,677.80
May	568,248	644,996.71	345,959	300,727.14
June	485,890	587,399.03	635,413	823,685.50
July	483,403	550,791.14	676,767	836,967.45

SHANGHAI-HANGCHOW-NINGPO RAILWAY

The Shanghai-Hangchow-Ningpo Railway was built jointly by the Kiangsu and Chekiang provincial authorities. The section from Shanghai to Fengching was built by Kiangsu, while the Fengching-Ningpo section was constructed by Chekiang. The two sections were joined in 1916 by Mr. Chung Wen-yao (鍾文耀) as director. The following shows the freight carried on this line during the first seven months of 1931 and 1932:—

	1931		1932	
	Kilograms.	Revenue.	Kilograms.	Revenue.
January	55,392,759	$126,147.50	41,782,737	$116,948.24
February	46,284,536	75,924.20	5,720,005	5,631.00
March	56,486,172	114,136.81	23,975,459	39,401.10
April	58,115,460	141,063.77	43,200,750	49,302.14
May	62,634,760	71,038.09	49,291,234	118,318.26
June	62,039,925	214,473.90	35,256,879	106,423.49
July	61,282,705	174,550.67	54,817,393	146,687.65

Taking the stations separately, the volume of freight handled by these stations during the first seven months of 1931 is as follows:—

	Kilograms.	Revenue.
Shanghai North (北站)	2,340,308	$10,456.85
Markham Road Flag Station (麥根路旗站)	213,000	349.49
Markham Road Station (麥根路) ..	3,237,800	6,316.40
Jessfield (萬王渡)	88,120	491.85
Shanghai South (南站)	7,399,860	31,486.51
Jihhuikang (日暉港)	12,611,200	21,316.15
Lunghua (龍華)	380	1.23
Lunghua Junction (新龍華)	4,075	13.04
Sungkiang (松江)	98,560	239.85
Fengching (楓涇)	22,875	91.55
Kashan (嘉善)	169,873	519.92
Kashing (嘉興)	1,247,812	2,711.88
Wangtien (王店)	491,858	973.17
Shashih (砂石)	1,673,128	3,053.05
Hsiehchiao (斜橋)	147,473	492.82
Chowwangmiao (周王廟)	4,350	7.81
Changan (長安)	513,082	4,074.00
Hsutsun (許村)	66,789	987.56
Linping (臨平)	355,656	2,230.34
Yenchiao (艮橋)	3,973,400	4,593.23
Kenshanmen (艮山門)	998,507	4,073.20
Kungchenchiao (拱宸橋)	3,888,750	8,363.76
Hangchow (杭州)	971,151	4,826.83
Nansingchiao (南星橋)	5,732,867	19,111.51
Zakow (閘口)	18,269,631	54,085.07
Total	61,282,705	$174,550.67

Passenger traffic during the first seven months of 1931 and 1932 on the Shanghai-Fengching section of the Shanghai-Hangchow-Ningpo Railway is shown in the following table:—

	1931		1932	
	Passengers.	Revenue.	Passengers.	Revenue.
January	256,341	$206,112.39	383,784	$251,665.80
February	246,081	183,461.56	248,600	355,138.12
March	300,008	246,740.02	246,492	268,243.83
April	380,090	395,420.72	252,468	258,204.96
May	453,052	375,890.93	411,550	342,609.30
June	270,395	255,274.22	254,893	302,094.06
July	243,299	232,373.26	257,163	305,709.77

TIENTSIN-PUKOW RAILWAY

The building of this line was started about 1908, the northern section, connecting Ihsien (嶧縣) and Tientsin, being constructed under German engineers while the southern section from Ihsien to Pukow was built under British supervision. Before the work started the Chinese Government arranged a loan of £5,000,000, of which £3,000,000 came from Germany and the rest from Great British. A second loan of £4,800,000 was later secured from German and British capitalists. The whole line running from Tientsin to Pukow via Tehchow (德州), Taian (泰安), Chufu (曲阜), Tungshan, and Pengpu (蚌埠), a distance of 1,013.83 kilometres, was opened to traffic in August, 1911, and there are 88 stations on the line.

LUNG-HAI RAILWAY

This line runs from Tunghai, on the east coast of Kiangsu Province to Lanchow (蘭州), Kansu Province, via Tungshan, Kaifeng (開封), Loyang (洛陽), Kuanyintang (觀音堂), Tungkuan (潼關) and Hsian (西安), a distance of 1,154 miles. The section between Tunghai and Tungkuan is open, but the section from Tungkuan to Hsian is under construction.

The branches of the Lung-Hai Railway are Kaifeng-Tungshan, Kaifeng-Loyang, Tungshan-Tsingkiangpu, Tung-

shan-Tunghai, Loyang-Tungkuan, Tungkuan-Haian and Hsian-Lanchow lines. These lines were originally built separately, but since 1912, with a loan from Belgium, they have been connected and are collectively known as the Lung-Hai Railway. The following is a brief history of each section:—

Kaifeng-Tungshan: This line was started in 1907 by merchants in Honan with a capital of $30,000,000, and was opened to traffic in May, 1915.

Kaifeng-Loyang: This section was built with a Belgian Loan of $4,000,000 francs. Work was started in 1904 and the line opened to traffic in January, 1910.

Tungshan-Tsingkiangpu: This line runs from Tungshan to Tsingkiangpu, via Hsipa (西壩) and Yangchiachuang (楊家莊). The section between Tsingkiangpu and Yangchiachuang was built by the Kiangsu Railway Company (江蘇鐵路公司) but owing to financial difficulties was turned over to Government control and became part of the Lung-Hai line.

Tunghai-Tsingkiangpu: This section was originally planned by the Kiangsu Railway Company to connect Hsipa and Tunghai, but later the route was changed to connect Tungshan and Tunghai via Peihsien.

Tungshan-Tunghai: This line connects Tungshan and Tapu (大浦), a distance of 316 miles, and was opened to traffic on July 1, 1925.

Loyang-Tungkuan: This section was started in 1910 by the Lo-Tung Railway Company (洛潼鐵路公司) with a capital of $3,340,000. The section between Loyang and Ima (義馬) was completed, but the remainder was built by the Lung-hai railway authority.

Hsian-Lanchow: This section is still under construction.

Tungkuan-Haian: Work on this section has been completed up to a point near Huaying (華陰), the remainder being still under construction.

CHAPTER II

HIGHWAYS

NATIONAL HIGHWAYS

ACCORDING to the program of highway construction, many lines are to traverse or radiate from Kiangsu Province. The only national motor-road open is the Nanking-Hangchow Highway, which links the National Capital and the capital city of Chekiang Province. Surveys were commenced early in 1928, but on account of extensive floods in this Province, and the immense difficulty experienced in transporting constructional material, the road was not opened until October, 1932. The entire work was undertaken by the Reconstruction Departments of the two provinces, each being responsible for the section of the road within its territory.

The section of the road in Kiangsu Province, extending from Nanking to Tungtang (萱 塘), is 145 kilometers long, about half the total length, and there are 35 bus-stations within the provincial limit. The Kiangnan Omnibus Company, a private concern, maintains a service between Nanking and Tungtang, paying a fixed sum to the Kiangsu Provincial Government for the franchise The 35 bus-stations are shown in the following table:—

Nanking	(南 京)	Chiuhsien	(舊 縣)
Hsiaolingwei	(孝陵衛)	Nantu	(南 渡)
Machun	(馬 橫)	Shihchiehtou	(石街頭)
Chilinmen	(麒麟門)	Huchiao	(胡 橋)
Hsitsun	(西 村)	Kuanlutsun	(官路村)
Wentoutsun	(坟頭村)	Liyang	(溧 陽)
Tangshan	(湯 山)	Fengtai	(鳳 台)
Hsienchienchiao	(仙澗橋)	Panchiapa	(潘家壩)
Huangmenchiao	(黃門橋)	Hsushe	(徐 舍)
Chuyung	(句 容)	Ifengchiao	(宜豐橋)
Ershengchiao	(二聖橋)	Chengtangchiao	(陳塘橋)

Houpeishu	(後白墅)	Ihsing	(宜興)
Tienwangssu	(天王寺)	Chuanpu	(川埠)
Yaunhsiang	(元巷)	Tsinglungshan	(青龍山)
Yangho	(洋河)	Tangtu	(湯渡)
Tungyohmiao	(東窯廟)	Painichang	(白泥場)
Laohokou	(老河口)	Tungtang	(蕩塘)
Lulitien	(六里店)		

PROVINCIAL HIGHWAYS

Shanghai-Hangchow Highway.—This highway has a total length of 215.6 kilometres, of which 70.04 is in the Kiangsu Province. The road is divided into six sections: Shanghai-Minghong (滬閔), Minghong-Nanchiao (閔南), Nanchiao-Choling (南柘), Choling-Ching-ssu-niang-chiao (柘金), Ching-ssu-niang-chiao-Chapu (乍金) and Hangchow-Chapu (杭乍). With the exception of the Shanghai-Minghong section, which is eight metres wide, with a pavement of six metres, the road has a bed 7.5 metres in width and a pavement of three metres.

Nanking-Wuhu Highway.—This road starts from the Chunghuamen Gate (中華門) in Nanking and ends at Wuhu (蕪湖) in Anhui Province, via Hsishanchiao (西善橋), Panchiao (板橋), Kiangningchen (江寧鎮), and Tungtsingchen (銅井鎮). It is 180 *li* long and 30 feet wide, is built of broken stone, and has just been completed.

Ihsing-Changshu Highway.—This road has a length of 60 kilometers and a width of nine meters. It connects the famous pottery center, Ihsing, and the granary of the Province, Changshu, via Wusih and Wuchin. The section in Ihsing is about 50 *li* long, and that in Wuchin, passing Panchiachiao (潘家橋) and Hsuehyenchiao (雪堰橋), is 14.32 kilometers long. The section in Wusih, 13.5 kilometers long, will pass Lukiang (閭江), Mengwan (孟灣), Yangwan (楊灣), Huachuang (華漵), Yaowan (姚灣), Shipu (石埠), Hsuhsiang (徐巷) and Meiyuan (梅園), while the Changshu section, 34 *li*, will pass Huachienchen (華尖鎮), Wengchiachuang (翁家莊), Chentangchen (陳塘鎮) and Yenhsiang (顏巷). The road is still under construction.

Chinkiang-Kuangteh Highway.—This road, 200 kilometers long and 20 feet wide, connects Chinkiang, the provincial capital, with Kuangteh (廣德) in Anhui Province via Tanyang, Chintan, and Liyang. Constructed was started in 1930 with conscripted labor, and it is not yet completed, though traffic has been opened on the section from Chinkiang to Tanyang, about 80 *li*.

Tanyang-Chintan Highway.—The road from Tanyang to Chintan via Erling (珥陵), Chiangchuangpu (蔣莊舖) and Peitachen (白塔鎮) is 35 kilometers long and nine meters wide. The road is built of broken stone, and the principal commodities transported are rice and cocoons. As there is no motor-bus service, pack animals, wheelbarrows, and ricshas are used.

Luho-Kiangpu Highway.—This road connects Luho with Kiangpu via Ketangchih (葛塘集), Panchengchi (盤城集), and Hsintiaoho (新挑河). The width of the road is nine meters, and the distance within the Luho district is 27.8 kilometers. The road, which is built of earth, has been completed, and pack-animals and rickshas are the only means of transportation.

Chinkiang-Shanghai Highway.—The road connecting the provincial capital and Shanghai will pass through Kiangyin, Changshu, Taitsang, Kiating, Nansiang (南翔), and Chenju (眞茹), its total length being 393 kilometers. Although construction has not yet been completed, the sections from Changshu to Taitsang, and from Taitsang to Kiating have been finished. It is planned that the road be built with coal cinders with tarred surface, and a regular bus service will be maintained.

Chinkiang-Chuyung Highway.—The road from Chinkiang to Chuyung has a total length of over 60 *li*, with a width of 27 feet. The principal towns passed are Chenwuchuang (陳武莊) and Tungchangchieh (東昌街), and the chief commodities transported are rice and wheat. The road is built of sand and stone, and in some sections pebbles are used. There is a regular bus service operating on the road, and the fare for the entire distance is $1.

Changshu-Kashing Highway.—This road starts from Fushan (福山) in Changshu, and terminates in Kashing, Chekiang Province, via Wuhsien and Wukiang. It has a total length of about 200 *li*, and a width of 30 feet. The section from Changshu to Wuhsien, which passes Mocheng (裏城), Hsinchuang (辛莊), Wuta (吳塔), Lumo (陸慕) and Likou (蠡口), is under construction; but that from Wuhsien to Wukiang has been completed, rickshas being the only means of conveyance.

Nanking-Chinkiang Highway.—This road has a total length of over 150 *li* and a width of 23 feet, and connects the national capital with the capital city of the Province. Construction has been completed, and the road is expected to be opened to traffic in the near future.

Sssuyang-Peihsien Highway.—This road runs by way of Suchien, a total distance of 142.5 kilometres of which 68 kilometres are in Suchien and the rest are within the Peihsien.

Huaiying-Tunghai Highway.—This road is 200 kilometres in length and 7 metres in width. The important towns along the route are Wangjungchen (王榮鎮), Hsiaojungchen (小榮鎮), Tingchichen (丁集鎮). Wulichen (五里鎮), Chuangchienchiao (莊澗橋), Hsuliuchen, (徐溜鎮). The commodities transported on this road are principally cotton piece-goods.

Kuachow-Yutai Highway—has a total length of 548 kilometres connecting Kuachow (瓜州), and Yutai (魚台), via Kiangtu, Kaoyu, Paoyin, Huaian, Ssuyang, Suchien, Huaiyin, Tungshan and Fenghsien. The length of each section is as follows: Kaoyu, 42 kilometres; Paoyin, 45; Huaian, 52; Huaiyin, 24; Ssuyang, 49; Suchien, 28; Suining, 62; Tungshan, 100 and Fenghsien 45.

Nantung-Kangyu Highway—has a total length of 300 kilometres, connecting Nantung and Kangyu via Jukao, Taihsien, Tungtai, Hsinghua, Yencheng, Founing, Kuanyun, and Tunghai. The length of the various sections is as follows: Nantung, 4 kilometers; Jukao, 47; Taihsien, 14.4; Tungtai, 50; Hsinghua, 28; Yencheng, 31; Founing, 46; Kuanyun, 69; Tunghai, 20.5 and Kangyu 33.

Chitung-Chuhsien Highway.—A total length of 360 kilometres, connecting Chitung and Chuhsien (滁 縣), via Haimen, Nantung, Tsingkiang, Taihsing, Kiangtu, Icheng, Luho and Kiangpu. The sections already constructed are as follows: Chitung, 15 kilometres; Nantung 53; Tsingkiang, 41; Taihsing, 40; and Kiangpu, 33.

Chenyao Road (城 姚 路).—This is a branch of a provincial highway in Nantung, being 4.5 kilometres in length and 9 metres in width. The road is open to traffic, the chief commodities carried being cotton and piece-goods.

Sekung Road (啬 公 路).—This highway is in Nantung, 6 kilometres in length and 3 metres in width, and is open to traffic.

DISTRICT HIGHWAYS

NANHUI

From Nanhui as a centre the following three *hsien* highways radiate:—

Shanghai-Nanhui Road.—This starts from Nanhui passing Paichu (百 曲), Tienhuaan (天 花 庵), Choupu (周 浦), Shenchuang (沈 莊), Hsiasha (下 沙), Hangtou (航 頭), Hsinchang (新 場), Changchiachiao (張 家 橋), and terminates at Chouchiatu (周家渡), Shanghai, measuring 30 feet wide and 39.564 kilometres long, with 30.664 kilometres in Nanhui. Cotton yarn and beans are largely transported on this road.

Chuansha-Nanhui Road.—This extends for a distance of 27.46 kilometres between Nanhui City and the East Gate of Chuansha, passing Tengchiachen (鄧 家 鎮), Chuchiao (祝 橋), and Tsangchen (倉 鎮). It is 30 feet wide and 25.057 kilometres is in Nanhui *hsien*. The road is made of clay, and cotton yarn and beans are largely carried by this route.

Nanhui-Minghong Road.—This extends from Nanchiao at Fenghsien to Minghong, touching Pupang (浦 浜) at Nanhui. Being designed for motor traffic the road is covered with coal cinders. It measures 30 feet wide and extends a distance of 122.523 kilometres, the section in Nanhui *hsien* being about 2.523 kilometres. Cotton, beans,

and salt are the chief goods carried on this road, which is a section of the Shanghai-Hangchow Highway.

SUNGKIANG

The *hsien* highways in Sungkiang are much more important than those dealt with above, the passenger and goods traffic on them being much heavier. A description of each follows:—

Sungkiang-Huichiao Road.—With the railway-station at Sungkiang as a starting-point, the Sung-Hui road passes Huayangchiao (華陽橋) and Kaochiao (高橋) and extends to Huichiao (匯橋) on the boundary of Sungkiang and Shanghai. The whole distance is covered with coal cinders and is 11.654 kilometres long and 5 metres wide. Part of the road is under construction.

Sungkiang-Ssuching Road.—With the North Gate of Sungkiang and Ssuching (泗涇) as terminus, and Pachiachiao (八家橋), Shengshengan (生生庵), Maihuachiao (買花橋), etc. on the route, this road forms an outlet for products from the northern parts of Sungkiang. About 12.475 kilometres of the road is in Sungkiang *hsien*, where it is 5 metres wide. This road is not completed, the section from Shengshengan to Sungkiang having to be built.

Sungkiang-Whangpoo Road.—Running from the West Gate of Sungkiang to the Whangpoo River, and with Chaokessu (超果寺), Chinshatan (金沙灘), Ta-chang-chin-chiao (大漲涇橋) on the route, this road is the main route by which goods from the Whangpoo River are carried to Sungkiang City. It is 4 metres wide, with 8 *li* within the boundary of Sungkiang *hsien*, and is made of clay.

Sungkiang-Fengching Road.—According to the proposed plan this road will extend from the North Gate of Sungkiang to Fengching (楓涇), passing through Machiaan (馬家庵). When completed it will be about 13.5 kilometres long. Surveys have been made and construction will soon begin.

CHUANSHA

The Chin-Tang road (欽塘路) and Chuan-Kao road (川高路) form the main highways of Chuansha *hsien*, both being laid out on old embankments. The former starts from Nanhui and terminates at the boundary of the Municipality of Greater Shanghai, touching Tsaichialu (蔡家路), Tsingtunchen (青墩鎮) and Hochingchen (合慶鎮) and while the latter runs from the South Gate of the Chuansha *hsien* to the Kaochiaochen (高橋鎮) in Shanghai, passing Hsiaowan (小灣), Tawan (大灣), Kungchen (龔鎮), Tsaochen (曹鎮), Hsuchen (徐鎮), and Kuchen (顧鎮). Over 50 *li* of the Chin-Tang Road and 40 *li* of the Chuan-Kao road about 13.8 metres of each are in Chuansha *hsien*, and both are about 10 feet wide, but the former is built entirely of clay while the latter is partly paved with stone and slate. Of the freight carried on the Chin-Tang Road towels are the most important line handled.

SHANGHAI

Shanghai-Nanhui.—This line, connecting Shanghai and Chowpuchen (周浦鎮), Nanhui via Sanlinchen (三林鎮), is 11 kilometres long and is a light railway operated by steam train and motors.

Shanghai-Woosung.—This road starts from Peichiaochen (北橋鎮), Shanghai, and terminates at Sungkiang, a distance of 7 kilometres. The road is open to motor traffic.

TSINGPU

When completed the Chuchiake-Shanghai Road will be the only highway between Tsingpu and Shanghai. Starting from Chuchiake (朱家閘) it passes Tsingpu city, Sungchetsun (崧澤村), Fangchiayao (方家窰), Hsuching (徐涇) etc., and extends to the aerodrome in Shanghai, a total length of 66 *li*. The road is 16 feet wide and is constructed of coal cinders.

WUHSIEN

There are three district highways in Wuhsien, the Wuhsien-Kunshan, Wuhsien-Wusih, and Wangting-Houshan highways. The first two are of military importance, while the last-named, upon completion, will greatly facilitate the transport of agricultural products.

Wuhsien-Kunshan Highway.—This starts from Loutang (婁塘) in Wuhsien and terminates at Kunshan, passing through Waikwatang (外跨塘), Weiting (唯亭), in its course. The Wuhsien section is of clay and about 30 *li* in length and 23 feet in width. As the completion of this road is only recent, no vehicular traffic is allowed yet except a few rickshas.

Wuhsien-Wusih Highway.—This connects Fengchiao (楓橋) in Wuhsien and Wusih, passing through Hushihkuan (滸墅關) and Wangting (望亭). The Wuhsien section is about 35 *li* in length and 23 feet in width. As the work of construction is not completed, there is no vehicular traffic on this road.

Wangting-Houshan Highway.—This starts from Wangting and ends at Houshan (後山), pasing through Kuangfu (光福), Shanjenchiao (善人橋), Mutu (木瀆), Hengching (橫涇) Huanglu (黃蘆) and Tutsun (渡村). The road is built mostly on a plain, though the middle portion is hilly. The Wuhsien section is about 100 *li* in length, and 23 feet in width. The work of construction is still going on.

KUNSHAN

Kunshan-Tsitsang Highway.—This connects the cities of Kunshan and Taitsang. The Kunshan section is about 11.45 kilometres in length and 8 metres in width, the surface being made of mud.

Wuhsien-Kunshan Highway.—This starts from Kunshan and terminates at Wuhsien, passing through Chenyi (正義). The Kunshan section of this road is 10.73 kilometres in length and is about 7 metres in width. There is no vehicular traffic on it at present.

KIATING

There is only one district highway in Kiating, the Kiating-Paoshan highway, which starts from the East Gate of Kiating and terminates at Lotien (羅店), in the district of Paoshan. It is 9 kilometres in length, 8½ kilometres being in Kiating. The Width is 7 metres and its surface is built with coal cinders. A bus service is in operation on this road, the fare being 25 cents.

PAOSHAN

Paoshan-Woosung Highway.—This road, 5 kilometres long and 13 metres wide, has a surface of coal cinders and is open to traffic. Motor-bus fares are at the rate of 0.016 cents per kilometre.

Paoshan-Woosung Forts Highway.—This links the South Gate, Paoshan and Woosung forts, and is 3 kilometres long, paved with coal cinders. The road is open to traffic, and goods are carried at 0.016 cents per kilometre.

Paoshan-Liuhang.—This road is 13 kilometres long and 10 metres wide, the commodities mainly transported by this route being vegetables and other agricultural products.

TSUNGMING

The District of Tsungming, being an island at the mouth of the Yangtse, has only two district highways within its area.

Tsunghsi Highway(崇西路).— This starts from the South Gate of the city and terminates at Sanhsing (三星鎮), passing through Tungmen (東門), Chiaochen (橋鎮) Shenchiaching (沈家涇), Sanchiangkou (三江口), Miaocheng (廟鎮), Nanhsinchiao (南新橋) Tsaopengcheng (草棚鎮) and Haihungkang (海洪港). It is 43 *li* in length and 23 feet in width, the road surface being of mud. All classes of vehicles, with the exception of automobiles, can be used on this road. Raw cotton, cotton cloth and foodstuffs are the principal articles transported, these being mostly carried on wheelbarrows at ¾ of a cent per picul per *li*.

Chunghsing Highway (崇新路).—This is still under construction, and will connect Chiaochen and Hsinkaiho (新開河). The road will be 26 *li* in length and 23 feet in width.

TAITSANG

Taitsang-Kunshan Road (太崑路).—Starting at Taitsang and ending at Kunshan, passing Hsimatou (西碼頭) in Taitsang, this road will be 7 metres wide and 24 *li* long, with more than 10 *li* in Taitsang *hsien*. According to the proposed plan the road bed will be of coal cinders and it will be open to motor vehicles.

WUSIH

Tungting Highway.—This highway begins from the North Gate of the city and terminates at Tungting (東亭). It is about 10 *li* in length and 20 feet in width, being paved with coal-cinders. Motors and ricshas constitute the principal traffic.

Kuangchin Highway.—Wusih station, on the Nanking-Shanghai Railway, and Changshinchiao (長新橋), a northern suburb of Wusih, are connected by this highway, which passes through Choushanpang (舟山浜) and Kwangchinchen (廣勤鎮). It is 8 *li* in length and 18 feet in width. About 4 *li* of the road is paved with coal-cinders while the other half is made of mud. Motor cars and ricshaws form the chief traffic on this road.

Tunghui Road.—This starts from north of the city and ends at Huishanchen (惠山鎮), and is about 10 *li* in length and 40 feet in width. Motor cars and ricshaws can be used on this road.

Kaiyuan Road (Main line).—This starts from the West Gate of the city and ends at the Plum Garden (梅園), passing through Yunghsiang (榮巷). The entire length is 13 *li*, and width, 25 feet. The middle of the road, about 15 feet in width, is paved with stone, while the two sides are surfaced with coal-cinders. Bus services are operated on the road.

Kaiyuan Road (Northern branch).—This connects Huishan and Outangchiao (藕塘橋), and is 9.7 *li* in length and 12 feet in width, with a gravel surface. Ricshas are used on this road.

Huaishan Road.—Huishan and the main line of the Kaiyuan Road are connected by this road, which is 3.4 *li* in length and 18 feet in width, being paved with stone. Motor-cars and ricshaws can be used on this road.

Hsienlitun Road.—This connects the Kaiyuan Road with the ferry at Sienlitun (仙蠡墩). It is 3.3 *li* in length and 12 feet in width, being paved with stone. Owing to its width, only ricshaws can be used on this road.

Yangming Road.—This consists of five short roads connected by a main line, and links five villages in the Yanming (揚名) district. The roads have a total length of 15 *li*, the width being 20 feet. The road is paved with stone.

Yanghsi Kungi Road (楊西公益路).—This connects Chingchi (青祁) and the ferry at Hsienlitun, and is an important line of communication. It is 7.5 *li* in length and 12 feet wide. Vehicular traffic is limited to ricshaws only.

Yanghsi Chingchi Road (楊西青祁路)—Chiangchiachiao (蔣家橋) and Huaishuhsia (槐樹下), in the Yangming district are connected by this road. It is 12 *li* in length and 12 feet in width, being paved with stone.

Hsiaochishan Road.—The Plum Garden and Hsiaochishan (小箕山) a scenic spot on Taihu Lake, are connected by this road. It is 2.7 kilometres in length and 8 metres in width, being made of coal-cinders.

Wusih-Kiangyin Highway.—This connects Kiangyin and Wusih, passing through Tangtou (塘頭), Chenchiachiao (陳家橋), Huchiatu (湖家渡), and Yenchiao (堰橋). The Wusih section is about 14.46 kilometres in length and 8 metres in width, being paved with coal-cinders. There is a bus service on this road.

KIANGYIN

Wusih-Kiangyin Highway.—In Kiangying this highway passes through Tangtouchiao (塘頭橋), Tsinyang (青暘) Taichuang (戴莊) and Nanche (南宅), and terminates at the West Gate of Kiangying. It is 38.76 kilometres in length and 7 metres in width, the surface being of mud.

Kiangyin-Wushan Highway.—Connecting the city of Kiangyin and the village-town of Wushan (巫山), this highway lies entirely in the district of Kiangyin, passing through Puhsiehchiao (蒲鞋橋), and Pailoutou (牌樓頭) It is 15 kilometres in length, and the surface being of mud. Traffic on this highway is limited to pedestrians and wheelbarrows. As this road runs across many rice fields, it frequently crosses irrigation ditches and small streams.

WUCHIN

Wuchin-Ihsing Highway.—This runs from Huaitehchiao (懷德橋) to Tsaochiao (漕橋), being an important highway connecting Wuchin and Ihsing. With a length of 30.85 kilometres in Wuchin and a width of 9 metres, it passes many villages, such as Hutangchiao (湖塘橋), Mingfeng (鳴鳳), Nanhsiashu (南夏墅), etc. The road is of mud, and is not open to motor vehicles.

Wu-Peng (武奔) Section of the Wuchin-Tangyang Highway.—This links Wuchin at Wentsaimen Gate (文在門) with Penniu (奔牛) through Hsincha (新閘), Lienkiangchiao (連江橋). It is 9 metres wide and 15.71 kilometres long in Wuchin, and is made of mud. It is not open to motor-cars or trucks.

Tungkiang Road (通江路).—This extends from Penniu to Yingsha (蔭沙), touching Loshuwan (羅墅灣), Hsihiashu (西夏墅), Shihchiaowan (石橋灣), etc., being an important highway leading to Taihsien and Yangchung. That section in Wuchin measures 24 kilometres long and 9 feet wide and is made of mud.

KAOSHUN

The important road in the district is the Lishui-Kaoshun Highway linking Lishui and Kaoshun via Chichiaochen (漆橋鎮).

Kiangning-Lishiu Highway.—This starts from Chouchiayuan (周家園), Lishui, and terminates at Wushachiao (烏剎橋) a distance of 30.9 kilometres. The road is 9 metres wide, and is made of mud.

Lishui-Kaoshun Highway.—Extending from Hunglanpu (洪籃埠) in Lishui, this highway runs for 42.7 kilometers till it ends at Shuangpeishih (雙碑石). The road is made of mud and is 9 metres wide. Light vehicles and pack animals are the only mans of transportation.

Lishui-Liyang Highway.—Linking Lishui at the East Gate with Liyang at Fenchiehshan (分界山) this highway covers a distance of 33.6 kilometres and is 9 metres in width. The road has not been well taken care of, and only pack animals and wheelbarrows are used.

Lishui-Chuyung Highway.—Starting from Chouchia-yuan (周家園) and ending at Chuyung, this highway measures 21.6 kilometres long and 9 metres wide.

KIANGNING

There are two important *hsien* highways in Kiangning. One known as the Nanking-Tangshan Road and the other the Chilingmen-Chihsiashan Road.

Nanking-Tangshan Road.—This starts from the Chungshan Gate (中山門) and extends to Hsingtangchen (新塘鎮), lying entirely in Nanking and joining the highways in Chekiang. On the route are Hsiaolinwei (孝陵衛), Chilinmen (麒麟門), Tangshuichen (湯水鎮). As it is 9 metres wide and built of gravel it is a popular road for motorists, passing through attractive country.

Chilingmen-Chihsiashan Road.—Extending from the Chiling Gate to Chihsiashan (棲霞山), passing Hsienhomen (仙鶴門), this road has a length of about 14.25 kilometres and a width of 3 metres. It is made of mud, and motor traffic is possible only in the dry seasons.

CHUYUNG

Two highways are being built in the district of Chuyung, and with the exception of bridge-work are nearly completed.

Chuyung-Hsiashu Highway.—This starts from the city of Chuyung and terminates at Hsiashu (下蜀). Its surface is made of mud and is 7 metres in width. As the bridges are not yet completed, only wheelbarrows and pack animals are employed on this road, and cereals, salt, hay and fuel are the principal freight transported.

Chuyung-Tanyang Highway.—This connects Chuyung with Tanyang. The section within the district of Chuyung is 16 kilometres in length and 7 metres in width, and is made of mud. Motor-cars cannot be used on account of the absence of bridges. Wheelbarrows and beasts of burden constitute the principal traffic.

WUCHIN

Wuchin-Ihsing Highway.—This runs from Huaitehchiao (懷德橋) to Tsaochiao (漕橋), being an important highway connecting Wuchin and Ihsing. With a length of 30.85 kilometres in Wuchin and a width of 9 metres, it passes many villages, such as Hutangchiao (湖塘橋), Mingfeng (鳴鳳), Nanhsiashu (南夏墅), etc. The road is of mud, and is not open to motor vehicles.

Wu-Peng (武奔) Section of the Wuchin-Tangyang Highway.—This links Wuchin at Wentsaimen Gate (文在門) with Penniu (奔牛) through Hsincha (新閘), Lienkiangchiao (連江橋). It is 9 metres wide and 15.71 kilometres long in Wuchin, and is made of mud. It is not open to motor-cars or trucks.

Tungkiang Road (通江路).—This extends from Penniu to Yingsha (蔭沙), touching Loshuwan (羅墅灣), Hsihiashu (西夏墅), Shihchiaowan (石橋灣), etc., being an important highway leading to Taihsien and Yangchung. That section in Wuchin measures 24 kilometres long and 9 feet wide and is made of mud.

KAOSHUN

The important road in the district is the Lishui-Kaoshun Highway linking Lishui and Kaoshun via Chichiaochen (漆橋鎮).

Kiangning-Lishiu Highway.—This starts from Chouchiayuan (周家園), Lishui, and terminates at Wushachiao (烏剎橋) a distance of 30.9 kilometres. The road is 9 metres wide, and is made of mud.

Lishui-Kaoshun Highway.—Extending from Hunglanpu (洪籃埠) in Lishui, this highway runs for 42.7 kilometers till it ends at Shuangpeishih (雙碑石). The road is made of mud and is 9 metres wide. Light vehicles and pack animals are the only mans of transportation.

Lishui-Liyang Highway.—Linking Lishui at the East Gate with Liyang at Fenchiehshan (分界山) this highway covers a distance of 33.6 kilometres and is 9 metres in width. The road has not been well taken care of, and only pack animals and wheelbarrows are used.

Lishui-Chuyung Highway.—Starting from Chouchia-yuan (周家園) and ending at Chuyung, this highway measures 21.6 kilometres long and 9 metres wide.

KIANGNING

There are two important *hsien* highways in Kiang-ning. One known as the Nanking-Tangshan Road and the other the Chilingmen-Chihsiashan Road.

Nanking-Tangshan Road.—This starts from the Chung-shan Gate (中山門) and extends to Hsingtangchen (新塘鎮), lying entirely in Nanking and joining the highways in Chekiang. On the route are Hsiaolinwei (孝陵衛), Chilinmen (麒麟門), Tangshuichen (湯水鎮). As it is 9 metres wide and built of gravel it is a popular road for motorists, passing through attractive country.

Chilingmen-Chihsiashan Road.—Extending from the Chiling Gate to Chihsiashan (棲霞山), passing Hsienho-men (仙鶴門), this road has a length of about 14.25 kilometres and a width of 3 metres. It is made of mud, and motor traffic is possible only in the dry seasons.

CHUYUNG

Two highways are being built in the district of Chuyung, and with the exception of bridge-work are nearly completed.

Chuyung-Hsiashu Highway.—This starts from the city of Chuyung and terminates at Hsiashu (下蜀). Its surface is made of mud and is 7 metres in width. As the bridges are not yet completed, only wheelbarrows and pack animals are employed on this road, and cereals, salt, hay and fuel are the principal freight transported.

Chuyung-Tanyang Highway.—This connects Chuyung with Tanyang. The section within the district of Chu-yung is 16 kilometres in length and 7 metres in width, and is made of mud. Motor-cars cannot be used on account of the absence of bridges. Wheelbarrows and beasts of burden constitute the principal traffic.

KIANGPU

Puchen Road.—This starts from the East Gate of Puchen (浦鎮) and terminates at the South Gate, being only 1.4 kilometres in length and 7 metres in width. It is surfaced with sand. Ricshaws and beasts of burden form the chief traffic, and foodstuffs and sundry goods are the principal freight transported, other charge being 20 cents per picul for the former and 25 cents for the latter.

Puchin Road (浦金路).—This starts south of Puchen an dterminates at Kiangpu, being 9 kilometres in length and 5 metres in width. It is surfaced with gravels. Ricshaws and beasts of burden form the principal traffic. Goods transported on this road are mostly foodstuffs and miscellaneous articles, the charge being 50 cents per picul for the former and 80 cents for the latter.

TANYANG

The only *hsien* highway in Tanyang is the Tangyang-Chuyang Highway which is still under construction. According to the proposed plan it is to be 6 metres wide and 17 kilometres long in Tanyang and will pass Tinchuang-pu (丁莊舖) to Chuyung.

TAIHSING

Taihsing-Huangchiaochen Road.—This is under construction and when completed will be 23 kilometres long and 7 metres wide, running between Taihsing and Huang-chiaochen (黃橋鎮).

Taihsing-Tiensingchiao Road—This road, from Tai-hsing City to Tiensingchiao (天星橋) is under construction and when completed will be 10 kilometres in length and 7 metres in width.

Huangchiaochen-Chichiachiao Road.—This is also under construction and when completed will be 10 kilometres in length and 7 metres in width. It starts from Huangchiao (黃橋) in Taihsing, and ends at Chichiachiao (季家橋), and will be an important means of conveying agricultural products to markets.

KIANGTU

Chinkiang-Kiangtu Highway.—This connects Kiangtu and Chinkiang, a distance of 30 kilometres. The road is paved with coal cinders and is the chief thoroughfare between this city and Chinkiang.

Kiangtu-Hochiachiao Road.—This is 14 kilometres long and 7 metres wide, being built of mud and sand.

KAOYU

Shih-Chieh Road.—This is near completion, connecting Chiehshoushan (界首山) and Shipaochen (射寶鎮), and will be 34 kilometres in length and 7 metres in width.

Kao-Ho Road.—This connects Taishanmiao (泰山廟) to Hokouchen (河口鎮) passing many towns including Kaoyu city. It is 32 kilometres long and 7 metres wide.

Kao-Fan Road.—This connects Tsaishenmiao (財神廟) and Fanchuanchen (樊川鎮) via Yunganchen (永安鎮), Paitsuchiao (八字橋) and Changchiachuang, (張家莊), 228 kilometres long and 7 metres wide.

Ling-Pa Road.—Except for the bridges this road has been completed. It is 12 kilometres long and 7 metres wide.

Ling-Fan Road.—This is 35 kilometres long and 7 metres wide, linking Chachiahsiang (查家巷), and Tunghuichen (東匯鎮).

PAOYING

The only highway in the district of Paoying is the Paoying-Chaotien Road, 23 kilometres long, of which 10 kilometres have been finished—to Paoying. This section is built with sand, and has been opened to traffic. It is the main road linking Paoyin and Huaian via Chaotien (曹甸).

HUAIAN

An-Chu Road (安車路)—Via Chakou (閘口,) Hsiakwan (下關), and Shihtang (石塘), the road has a distance of 25.5 kilometres. Construction has not been quite completed.

Tung-Huai Road (東淮路)—This is the most important route linking Huaian with Founing, Huaiyin, etc., passing many towns and villages. The total length is 34.6 kilometres, and a part is still under construction.

Lien-Huai Road (漣淮路)—Connecting Huaian and Lienshui hsien, this road is 34 kilometres long.

HUAIYIN

Yu-Yueh Road (漁悅路)—This connects Yukouchen (漁溝鎮) and Yuehlaichi (悅來集), via Tahsingchuang (大興莊), a distance of 29 kilometres, of which 26 is in the hsien district of Huaiyin. The road is 7 metres wide, made of mud, and has been opened to traffic.

Huai-Nan Road (淮南路)—This is the main road connecting this hsien with Ssuyang, extending from the north gate of Huaiyin to Nansingchi (南新集) in Ssuyang, a distance of 26 kilometres. The road is built of mud, and is 7 metres wide.

SUCHIEN

Su-Yang Road (宿洋路)—Via Tsingkiang and Tungshan, this road has a length of 23 kilometres and is made of mud. It has been opened for traffic, and an omnibus service is maintained at the rate of 2 cents a kilometre.

Suchien-Suining Road—runs from Suchien city to Shachi (沙集), a distance of 20 kilometres. A bus service is maintained at the rate of 3 cents a kilometre.

SUINING

Suining-Suchien Road—joining the cities of Sunining and Suchien, is the only road between these two *hsien*.

Sui-Tso Road (睢皂路)—This runs between Suining city and Tsaohochen (皂河鎮), a distance of 26 kilometres, 23 of which are within the district of the *hsien*.

Suining-Peihsien Road—joints the *hsien* city and Kupeichen (古邳鎮), passing Weichichen (魏集鎮), a distance of 28.5 kilometres. The entire length is within the *hsien* limit.

Mu-Shun Road (木順路).—This is 23 kilometres long, an important road linking the city with the suburbs. It starts at Mushetien (木社店) and terminates at Shunho (順河), the entire length being within the *hsien* limit.

Sui-Tung Road (睢潼路).—This road connects Suining and Tungchunchi (潼郡集) via Chuchichen (朱集鎮) and Taoyuanchen (桃園鎮), a distance of 23 kilometres. The road is 7 metres wide.

HSIAOHSIEN

The important highway in the district of Hsiaohsien is the Hsiaohsien-Tungshan Road, having a length of 24 kilometres half of which is in the district of Hsiaohsien. The road is 9 metres wide and has been open to traffic. Beans, wheat, mellon seeds, cabbages, and fruits are carried on this road.

TUNGSHAN

Tungshan-Suchien Road.—Via Yinchuanglien (殷莊棟), and Mashanyu (馬山圩), the road is open to motor traffic, and large quantities of agricultural products are being transported on it.

Tungshan-Tunghai Road.—Via Hotsun (賀村), Tamiao (大廟), and Tahsuchia (大許家), the section of this road in the district of Tungshan is 15 kilometres long and 7 metres wide. It is open to traffic, the products carried on it being mostly foodstuffs and fuel.

Tungshan-Hsiaohsien Road.—This road has a distance of 28.50 kilometres, of which 12 kilometres is in the district of Tungshan. The road is 9 metres wide, and is open to traffic.

TANGSHAN

Tangshan-Peilulou (北呂樓) **Road.**—This is 26 kilometres long and 4 metres wide. Commodities carried on this road are mainly wheat and beans, at the rate of $2 per 100 catties.

Tangshan-Changanlou (張暗樓) Road.—This is 24 kilometres long and 4 metres wide. The road has been open only to light vehicular traffic, and the commodities transported are mostly wheat and beans.

Tangshan-Maliangchi (馬良集) Road.—This is 22 kilometres long and 4 metres wide, and lies entirely in the district of Tangshan. Commodities carried on this road are wheat and beans.

Tangshan-Tangwa (唐窪) Road.—This is 16 kilometres long and 4 metres wide, in the district of Tangshan.

FENGHSIEN (豐縣)

Fenghsien-Peihsien Road—This road connects Tungkuo (東郭) of Fenghsien and Nankuan (南關) of Peihsien, a distance of 35 kilometres, of which 10 kilometres are in the district of Fenghsien. The road is 7 metres wide and is open to traffic.

Fenghsien-Tangshan Road.—This is 41 kilometres long, of which 15 kilometres are in the district of Fenghsien. The road is 7 metres wide and is open to traffic.

Fenghsien-Tanhsien (單縣) Road—has a total length of 60 kilometres, the section within Fenghsien being 22 kilometres. This road carries heavy traffic in agricultural products.

PEIHSIEN (沛縣)

Peihsien-Tungshan Road—Via Changsai (張寨), this 60 kilometre-road links the two *hsien*. Of the total distance 15 kilometres are in the district of Peihsien. The freight charge is 20 cents per kilometre.

Peihsien-Fenghsien Road—is 34 kilometres long and 6 metres wide. Of the total length 20 kilometres are in the district of Peihsien. The road is only suitable to horse traffic, and goods (mostly cereals) are carried at 20 cents per kilometre.

Peihsien-Lungkuchi (龍固集) Road—is 23 kilometres long and 4 metres wide. The road is suitable for horse and ox traffic.

Peihsien-Hsishan (栖山) Road—is 30 kilometres long and 3 metres wide, suitable for horse and ox traffic.

PEIHSIEN (邳縣)

The most important road in the district of Peihsien is the Yungtai Highway (運台路), which connects Yunho Station (運　河) on the Lung-Hai Railway, with Chihchow (沂州), Shantung Province. The section of the road in the district of Peihsien is 42 kilometres long and 5 metres wide.

TUNGHAI

Hsinpu-Hukou Road—Linking Hsinpu (新浦) of Tunghai and Hsukou (墟溝) of Kuanyun, 28.5 kilometres long and 7 metres wide.

Hsingpu-Tapu Road—This road connects Hsinpu and Tapu and is 10 kilometres long and 7 metres wide. It is a trunk road linking many villages and towns within the *hsien* of Tunghai.

KUANYUN

Kuanyun-Tungkan Road—This connects Panpu (板浦), in Kuanyun and Tungkan (東坎) in Founing, 58 kilometres of the entire line is in the district of Kuanyun. The section between Panpu and Yangchi (楊集) is opened to motor traffic while the rest is suitable for lighter vehicles. The freight for motor transport is 15 cents a picul per kilometre, while by ricksha the charge is about 8 cents.

Kuan-Tung Road (灌東路)—This road connection Panpu and Yangchuang (楊莊), a distance of 28 kilometres, with a width of 7 metres. The section between Panpu and Chungchen (中正) is open to motor traffic, freight being 15 cents a picul per kilometre.

Hsukou-Hsinpu Road—This road is 29 kilometres long and 7 metres wide in the district of Kuanyun, joining Hsukou and Hsingpu. This road is open to all descriptions of traffics.

Hsu-Kao Road (墟高路)—Joining Hsukou and Kaokungtao (高公島), this road will be 15 kilometres long, but only 9 kilometres have been completed.

Yangchiachi (楊家集)—**Kaokungtao Road.**—This is still under construction.

Shuyang-Chengchiakang (陳家港) **Road**—connecting Lienshui and Shuyang, 100 kilometres long and 7 metres wide. Of the total length 20 kilometres are in the district of Kuanyun. The road is open to traffic, freight being 15 cents a picul per kilometre for pack-horse or ox transport, and 10 cents a picul a kilometre for ricksha.

Yang-Kang Road (楊港路)—This road is 25 kilometres long and 7 metres wide, connecting Yangchiachi (楊家集) and Shuangkang (雙港). The road is open to traffic, and is an important outlet for the agricultural products, of Kuanyun district. Freight charge is 15 cents a picul per kilometre by pack animals and 10 cents for motor transport.

Hsiang-Nan Road (響南路)—This road connects Hsiangshuikou (嚮水口) and Nankang (南崗) in Tunghai, is 70 kilometres long and 7 metres wide, and 40 kilometres are in the district of Kuanyun. Freight is 0.015 cents a picul per kilometre for ox traffic and 10 cents for motor transport.

Lienshui-Hsinanchen Road (漣新路)—This road is 38 kilometres long and 7 metres wide connecting Hsinan (新安) in Kuanyun and Lienshui. Of the total length 20 kilometres are in Kuanyun *hsien*.

Panpu-Hsinpa Road—This road connects Panpu (板浦) and Hsinpu (新壩), is 9 kilometres long, 7 metres wide, 5 kilometres being in Kuanyun district.

KANGYU

San-Lin Road (三臨路).—This road connects Sanyangkang (三洋港) and Lingchi (臨沂) of Shantung, a distance of 45 kilometres. The section of the road between Sanyangkang and Tsingkoushih (青口市) is open to traffic.

Lin-Lu Road (臨莒路)—connects Lingchuanghu (臨莊湖) and Luhsien (莒縣) of Shantung, a distance of 55 kilometres. The road is under construction, but is open to pack animals.

Kang-Hai Road (贛海路)—joining Kangyu City and Haitouchen (海頭鎮), 17 kilometres long and 7 metres wide.

Sha-Lin Road (沙霖路)—from Tashaho (大沙河) Linchuanghu (霖莊湖), 18 kilometres long. The road is under construction, but is open to horse and ox traffic.

LIENSHUI

Lien-Hsin Road (漣新路)—connecting Lienshui and Hsinan (新安) at Kuanynan. It is 38 kilometres long and 7 metres wide.

Lien-Tien Road (漣佃路), connecting Lienshui and Tienhuchen (佃湖鎮), 45 kilometres long and 7 metres wide.

Lien-Fou Road (漣阜路)—connecting Lienshui and Tungying (黃營) at Fonning *hsien*, 27 kilometres long and 7 metres wide.

Lien-Su Road (漣蘇路)—connecting Lienshui and Suchui (蘇嘴), 15 kilometres long and 7 metres wide.

Chen-Ma Road (陳馬路)—connecting Chenshihhsiang (陳師巷) in Lienshui and Machangchen (馬廠鎮), in Shuyang *hsien*, 21 kilometres long and 7 metres wide.

FOUNING

Fou-Yin Road (阜陰路).—This is between Suchiachui (蘇家嘴) and the city of Founing, 56 kilometres long and 7 metres wide.

Fou-Tan Road (阜灘路)—between city of Founing and Patan (八灘), 55 kilometres long and 7 metres wide.

Kan-Tung Road (坎東路)—between Tungkan (東坎) and Lienshui city, 12.5 kilometres long and 7 metres wide.

Tungkan-Yencheng Road—59 kilometres long and 7 metres wide, in the district of Founing, not completed.

TUNGTAI

Tungtai-Kuchiatun (顧家墩) **Road**—37 kilometres long, under construction.

Tungtai-Yuhsi (淤溪) **Road**—34 kilometres long, under construction.

Tungtai-Huangchiashe (黃家舍) **Road**—43 kilometres long, under construction.

Fuan (富安)-**Pincha** (拼茶) **Road**—57 kilometres long, under constructidon.

TAIHSIEN

The Taihsien-Haian (海安) Road is the chief highway in the district of Taihsien. It is 52 kilometres long and 7 metres wide, and has been partly completed.

JUKAO

The principal highway in the district of Jukao is the Lung-Che Road (龍浙路) 28 kilometres long and 7 metres wide, joining Jukao city and Hsinshengkang (新升港) an important road leading to Shanghai. The building of this road was finished in October, 1932.

TSINGKIANG

Kiangtsing Highway (江靖路) is the chief highway in the district of Tsingkiang, 8 kilometres long and 7 metres wide. The road is paved with coal cinders and is open to motor traffic. Bus fares are 24 cents per passenger.

NANTUNG

Chungshan Road (中山路)— from Ichiachiao (易家橋) to Haifuchen (海復鎮), 90 kilometres long and 9 metres wide.

Chengshih Road (城市路)—from Ichiachiao-Haierhsiang (孩兒巷), 90 kilometres long and 9 metres wide.

Chengkang Road (城港路)—between Haierhsiang and Tienshengkang (天生港), 9.12 kilometres long and 8 metres wide. The road is made with crashed stone and surfaced with gravels, and is open to traffic.

Chengshan Road (城山路)—between Tuanchiapa (段家壩) and Langshan (狼山), 10 kilometres long and 8 metres wide. The road is open to traffic.

Chengjen Road (城任路)—joining the Chengshih Road and Jenkanchen (任港鎮), 2.85 kilometres long and 6 metres wide.

Yunkang Road (雲港路)—between Yuntaishan (雲台山) and Tienshengkang, 5.7 kilometres long and 9 metres wide.

Peikang Road (北幹路)—between Pingchao (平潮) and Paipu (白蒲), 15 kilometres long, 9 metres wide. The road is laid with coal cinders.

Chiangchuan Road (姜川路)—between Chiangtsaokang (姜灶港) and Chuankangchen (川港鎮), 5.7 kilometres long and 6 metres wide.

First Branch Road (第一支路)—between Houchiayucha (候家油榨) and Shihkangchen (石港鎮) 28.5 kilometres long and 6 metres wide.

Second Branch Road (第二支路)—between Ssuyangpa (四楊壩) and Yunganchen (永安鎮) 2.85 kilometres long and 6 metres wide.

Third Branch Road (第三支路)—between Yuanchen (源鎮) and Sanyuchen (三餘鎮), 12.5 kilometres long and 6 metres wide.

Fourth Branch Road (第四支路)—between Niuchiao (牛橋) and Sansingchiao (三姓橋), 4.5 kilometres long and 6 metres wide.

Chungping Road (總拼路)—between Wutsungpu (五總埠) and Hsiaoputsu (小埠子), 1.7 kilometres long and 7 metres wide.

Chakang Road (閘港路)—between Tachuanchiao (大川橋) and Tienshengkang (天生港), 5.7 kilometres long and 6 metres wide.

Pingchao Road (平潮路)—with five branch roads, namely: (1) Pingchao-Talifan (大李范), (2) Pingchao-

Wutsechiao (五接橋), (3) Pingchao-Hsiaolifan (小李范) (4) Pingchao-Wutangchiao (吳唐橋) and (5) Pingchao-Hsinsanshili (新三十里).

HAIMEN

Tunghai-Chitung Road—via Tienpuchen (天浦鎮), Hsienshichen (縣市鎮), Changlohchen (長樂鎮) and Sanyangchen (三陽鎮), 93 kilometres long and 7 metres wide, in the district of Haimen.

Tsinglungkang (青龍港)-Ssuyangpa (四陽壩) Road—26 kilometres long and 7 metres wide.

Lusuchen (呂四鎮)-Chiulungchen (久龍鎮) Road—16 kilometres long and 7 metres wide.

Sungchikang (宋季港)-Changchiachen (張家鎮) Road—7 kilometres long and 7 metres wide.

Fuhsing (富興)-Haifu (海復) Road—7 kilometres long and 7 metres wide.

CHITUNG

Huilungchen (惠隆鎮)-Miaokang (廟港) Road—27 kilometres long and 4.5 metres wide.

Huilungchen-Tatungtsun (大同村) Road—16 kilometres long and 4.5 metres wide.

Huilungchen-Huianchen (惠安鎮) Road—25.5 kilometres long and 4.5 metres wide.

Huilungchen-Yunglungchen (永隆鎮) Road—24 kilometres long and 4.5 metres wide.

CHAPTER III

WATERWAYS

WITH its long coastline; the Yangtse and other rivers, and many lakes, creeks, and canals, Kiangsu has many natural advantages over other Chinese provinces in the matter of water transportation.

Kiangsu is separated from Shantung on the east by Tishuikou (获水口), south of which lies Tsingkou (青口), the outlet of the Siaosha creek (小沙河) forming an excellent harbour for the northern part of the Province. Further south is another creek, the Tashaho (大沙河), which leads to Tapu (大浦) and Tunghai, a regular launch service being maintained between the latter city and Shanghai. To the southeast, off the coast where the Peichaoho (北潮河) runs into the sea, is the island of Kaishan (開山) near which lies the mouth of the Old Huangho (淤黃河). The Grand Canal flows into the sea at four important points south of Kaishan, known respectively as Peiyanghokou (北洋河口), Iyanghokou (射陽河口) Hsingyangkangkou (新洋港口) and Toulungkangkou (門龍港口), but all unapproachable by sea-going vessels owing to sand banks, which are found all along the coast down to Tsungming Island.

Though there are many steamship services connecting the coastal cities of the Province, they also extend largely to ports in many other provinces; as, for instance, the Shanghai-Tientsin, Shanghai-Canton, Shanghai-Newchwang, Shanghai-Antung, Shanghai-Ningpo, Shanghai-Foochow, Shanghai-Wenchow, Haimen-Tinghai, and Haichow-Tsingtao lines. The shipping services maintained exclusively along the Kiangsu coast consist only of that between Shanghai and Tunghai, and between Chuansha and Hengshatao (橫沙島).

The Yangtse River is the main outlet of many important streams in the Province. The section of the river between Shanghai and Hankow, about 1,026 kilometres in length, is served by numerous steamship lines, and is well marked with beacons and buoys to facilitate navigation at night. The river passes 21 cities in Kiangsu:—Shanghai, Paoshan, Tsungming, Chitung, Haimen, Nantung, Taitsang, Changshu, Kiangyin, Tsingkiang, Taihsing, Wuchin, Yangchung, Tanyang, Chinkiang, Chuyung, Kiangtu, Icheng, Luho, Kiangning, and Kiangpu. Between these places there is a network of shipping lines, of which the most important are Tsungming-Shanghai, Tsungming-Chitung, Tsungming-Haimen, Shanghai-Haimen, Nantung-Shanghai, Nanking-Shanghai, Chinkiang-Shanghai and Kiangyin-Shanghai.

Among the other large waterways in the Province are the Grand Canal, the Yunyenho (運鹽河), the Whangpoo (黃浦江), the Woosungkiang (吳淞江) and the Chuanchangho (串場河). The Grand Canal is the longest of these and on it ply many steamboats, each having its own regular route, the most important services being between Tsinkiangpu and Chinkiang, Chinkiang and Wuhsien, Wuhsien and Hangchow, Wuhsien and Kashing (嘉興) and between Wuhsien and Huchow (湖州).

The Yunyenho runs from Founing southwest to Tsingkiangpu and Kaoyu; the Whangpoo flows east to Woosung via Shanghai, while the Woosungkiang and the Chuanchangho are two important waterways between Shanghai and Wuhsien and between Nantung and Kiangtu.

Further details follow on the subject of the waterways of the Province:—

NANHUI

Among the well-known streams and rivers in the district of Nanhui are the Patsaokang (八灶港), Hengmienkang (橫沔港), Changpang (長浜), Pailiencing (白蓮涇), Chakang (閘港), Yunyenho, Hsientang (鹹塘), Santsaokang (三灶港) and Peilutsaokang (北六灶港) providing five important navigation routes:

(1) Kiangchialu (江家路)-Shanghai, (2) Tatuan (大團) Shanghai, (3) Chuansha-Nanhui, (4) Nanhui-Chowpu (周浦) via Yentang, Santsaokang and Whangpoo, and (5) Nanhui-Chowpu, by way of Peilutsaokang and Whangpoo. The freight carried on these waterways consists mainly of beans and cotton.

FENGHSIEN (奉賢)

In this district there run four important streams,—the Henglitang (橫瀝塘), Kinghuitang (金匯塘), Hsiaochakang (小閘港), and Chukangtang (竹岡塘), all leading towards Shanghai. The first-mentioned is the only main stream, and is about 22 kilometres in length, flowing into the Whangpoo from Hsiahengking (下橫涇). The other three start respectively from Itsunpa (一村壩), Liangtien (梁店), and Choling (柘林) and flow into the Whangpoo. On these waters all the year round steamboats and junks carry dried shrimps, cereals, drugs, earthenware, etc.

SUNGKIANG

Sungkiang is connected with Shanghai by the Whangpoo, and shares the Mao river (泖河) with Tsingpu. The Whangpoo starts at Kashan (嘉善), Chekiang and terminates at Paoshan, the section flowing through Sungkiang being about 22 kilometres long.

CHUANSHA

Chuansha is situated on the Eastern China Sea with two big streams running through it—the Santsaokang (三灶港) and Hutangkang (瀆塘港). About 35 kilometres off the coast is Hengsha Island (橫沙), between which and Chuansha there are always large numbers of sailing junks carrying ceareals. The Santsaokang has a total length of 28.50 kilometres, and is the main water route to Shanghai, its slow current being navigable throughout the year. Of about the same length is the Hutangkang, which links the city wiht Nanhui. Steamboat services are now maintained on this river.

SHANGHAI

The rivers and streams passing through Shanghai are the Whangpoo, Chowputang (周浦塘), Sanlingtang (三林塘), Yangtzetang (楊淞塘), Changchiaokang (長橋港), Luluitang (六磊塘) Yutang (俞塘), Hengli (橫瀝), Chukangtang (竹岡塘), Shakangtang (沙岡塘) and Huakingkang (華涇港).

The Whangpoo is the principal navigable channel between Shanghai and Pinghu (平湖), Chekiang, and many important cities and towns are situated on its banks. Cotton, cotton yarn, piece-goods, coal, iron, and machinery are the commodities mainly transported on this river.

Chowputang is so-called because it leads to Chowpu (周浦), a large village in Nanhui, where the stream empties into the Yentang and Whangpoo. Only sailing boats are now available on this creek, their freight consisting largely of cotton, rice, wheat, bean-oil, wine, and miscellaneous groceries.

Sanlingtang creek links many villages in Pootung (浦東), which covers a very large area on the Whangpoo directly opposite Shanghai. The navigable season lasts about six months, from April to October, but the creek is not suitable for steamers. The most important commodities transported are bean-oil, wheat, cotton, rice, and groceries.

Yangtsetang connects Shanghai Hsien with the Municipality of Greater Shanghai, and sailing-boats are the only means of transportation.

Changchiaokang forms an important waterway between Shanghai and Sungkiang, but is not navigable in the winter.

Luluitang also leads to Sungkiang and lies northwest of Shanghai Hsien, but is suitable only for sailing boats.

Yutang empties into the Whangpoo at a point east of Tangwanchen (唐灣鎮), the other end being at Sungkiang. It is navigable throughout the year, and its tributaries connect with Hengli, Chukangtang and Shakangtang.

Hengli rises in Kiangyin and flows into the sea via Shanghai and Fenghsien. Sailing boats are the ordinary means of transportation.

Chukangtang runs from Woosung to Fenghsien, and is an important navigable channel connecting the first and third sections of Shanghai Hsien.

Shakangtang has the same terminals as the Chukangtang, but follows a different course. Many sailing boats ply on this river, especially between the first and sixth sections of the district.

Hukingkang is a short creek, emptying into the Whangpoo at the third section of Shanghai Hsien. It is not navigable in winter.

TSINGPU

There are four important creeks in this city, Tayingpu (大盈浦), Choche (柘澤), Chaotenpu (趙屯浦) and Hengmao (橫泖). The Tayingpu provides two navigation routes, Chuchiachueh (珠家角)-Shanghai and Chuchiachueh-Anting (安亭), 51.3 and 28.30 kilometres in length respectively. The Choche, 41.04 kilometres long, connects Chingche (金澤), a town southwest of Tsingpu, with Sungkiang, and is navigable by steam launches. The Chowtenpu has a length of 34.2 kilometres, and is an important stream in the southwest suburbs of the city. The Hengmao leads to Huangtu, passing Tsingpu in its northeast suburb.

CHINSHAN

In the district of Chinshan the Whangpoo is the only river worth mentioning. Perhaps in no city is this river so important as in Chinshan, as there is no other waterway to connect Chinshan with Shanghai and Sungkiang.

WUKIANG

Two local waterways have to be mentioned—the Grand Canal and the Whangpoo tributary. On account of the small mileage of highways in Wukiang, the Grand Canal

assumes particular importance, being the main traffic route to Kashing, Huchow, and Hangchow in Chekiang Province. The Whangpoo tributary is short, connecting the city with the village of Lushu (蘆墟).

WUHSIEN

Wuhsien has many facilities for water transportation, there being the Grand Canal, the Yuan Ho Tang (元和塘), Hsukiang (胥江), Loukiang (婁江), Taihu Lake, and a tributary of the Whangpoo. These form 11 water routes, and are largely responsible for the commercial prosperity of Wuhsien.

The Grand Canal—In Wuhsien the Grand Canal holds a very important position in the matter of water traffic, as it connects various centres between Wuhsien and Chekiang Province. Near Pingwang (平望) the Grand Canal divides into three channels, of which one is the main route for direct communication between Wuhsien and Kashing, the other two connecting the city with Huchow and Hangchow.

The Canal is also an important link between Wuhsien and Wusih. Though the Nanking-Shanghai railway offers much faster transportation, the higher freight charges are a handicap to small merchants, to whom the Grand Canal is indispensable for transport purposes.

The Yüan Ho Tang, 41 kilometres in length, is the main route between Wuhsien and Changshu, emptying into the Fushantang (福山塘), which in turn flows into the Yangtse.

The Hsukiang and Taihu Lake.—The course of the Hsukiang is wholly in Wuhsien, it being only 16 kilometres long, with an average width of 18 metres. It empties into Taihu Lake, with which it offers two shipping routes, one being to Tungshan (東山) an island in the Lake, while the other links the city with Mutu (木瀆), an important village under the jurisdiction of Wuhsien.

The Loukiang flows into the Yangtse by way of Liuho (瀏河), Taitsang. It has a total length of 58.40 kilometres and an average breadth of about 18 metres, being navigable to Taitsang, but from that city to Liuho becoming more like a torrent. The creek provides many shipping routes, the most important being that to Kunshan.

The Whangpoo Tributary.—This is one of the many tributaries of the Whangpoo River, and forms a good waterway between Wuhsien and Shanghai, besides furnishing a route to Lushu, Wukiang.

KUNSHAN

At least six creeks must be mentioned in this connection, namely, the Changshutang (常熟塘), Soochowtang (蘇州塘), Taitsangtang (太倉塘), Hanputang (澳浦塘), Tsingyangkang (青陽港), and Woosungkiang (吳淞江). The Changshutang is so-called because it links the city with Changshu. The second and third creeks are named on the same principle. The Hanputang terminates at Chowshih (周墅), some 17 kilometres from the east gate of Kunshan. The shortest creek is the Tsingyangkiang, which runs through the southeast suburb of the city and is connected with the Woosungkiang. Rice, oils, and vegetables are the principal commodities carried on the last two waterways.

KIATING

The Woosungkiang, Liuho, Hengliho (橫瀝河 south section) Kupu (顧浦), Yentitang (鹽鐵塘), and Lienchitang (練祈塘) are the large rivers in this district, forming a network of waterways between the city and numerous surrounding villages. On the Woosungkiang there are a large number of steamers and sailing boats, carrying cereals, cotton, groceries, etc. as well as passengers.

PAOSHAN

Rivers flowing through the district of Paoshan include the Wentsaopang (蘊藻浜), Tichinho (狄涇河) and Chomaho (走馬河), all being important arteries of

commerce between the *hsien* and other districts. Details concerning navigation routes on these waters are as follows:—

Wentsaopang.—This creek connects Woosung with the towns of Malu (馬陸) and Kuangfuhsiang (廣福鄉) in Kiating, via Huchiachuang (胡家莊), Chenchiahsiang (陳家港), etc., and is navigable by junks and river boats. With its strong current it is also of great value in the irrigation of farms.

The Tichinho is the principal artery of commerce between Lotien (羅店) and Shanghai, passing through Panpu (彭浦), Tachang (大場) and Liuhang (劉行), being navigable by sailing boats and junks, and with a current of from 4 to 6 kilometers an hour.

The Chomaho forms the principal waterway between Kiangwan and Tachang and is navigable by sailing boats carrying rice, wheat, soy beans, and rice-wine.

Other particulars regarding these three streams are as follows:—

	Total Length (km.)	Within Paoshan	Depth Flood (m.)	Depth Ebb (m.)	Width (m.)	Current	Transportation fees Navigable by	Transportation fees Passenger	Transportation fees Freight (per picul)
Wentsaopang	22.8	17.67	2.4	0.9	80	Strong	Junks, Sailing Boats	—	$.50
Tichinho	27.36	26.52	2.25	1.2	15	"	"	—	.40-50
Chomaho	18.24	15.96	2.1	1.2	9	"	"	.20	.40-50

TSUNGMING

Tsungming, an alluvial plain at the mouth of the Yangtse River, is traversed by many rivers, the most important of which are as follows:—

Nanmenkang (南門港).—This is an important stream connecting the southern section of the *hsien* with Shanghai, and is navigable by steam-launches. Among the cargoes carried from and to Shanghai are cotton, cotton yarn, cloth, cereals and miscellaneous merchandise for daily use.

Ertiaoshuho (二條豎河).—Passing through the town of Ertiaoshuho near the central part of hte *hsien*, this stream forms the main waterway to Shanghai, and is navigable by both steam-launches and sailing boats.

Hsinkaiho (新開河).—A water route to Shanghai through the town of Hsinkaiho, navigable by steam-launches.

Paochenkang (堡鎮港).—A navigable waterway to Shanghai in the eastern part of the district, with launch-services running regularly every other day.

Chihsiaokang (七澈港).—Another navigable water route to Shanghai in the eastern part, passing through such towns as Chihsiao (七澈) and Chenchiachen (陳家鎮).

Haihungkang (海洪港).—An important route connecting the western section of the district with Chitung, Haimen, and Shanghai, with launch services every other day.

Wankang (灣港).—A route linking the northern part with Chitung via Pangchen (浜鎮), and navigable by sailing boats.

Lauhsiao (老澈).—A second waterway connecting the northern part and Chitung, via southern and northern Payahchen (排牙鎮), navigable by sailing boats only.

Chenyuanhsingkang (陳元興港).—Another navigable waterway for sailing-boats, going to Chitung via Shankuangchen (三光鎮) in the north-western part of the district.

TAITSANG

Rivers in the district of Taitsang are Hengtang (橫塘), Chihotang (致和塘), Liuho (瀏河), Chiputang (戚浦塘) and Yanglintang (楊林塘), forming five important transport routes.

Hengtang.—Communications between various towns and villages in the north-western part of Taitsang depend

entirely upon this stream, which reaches Kunshan through Chowshih (周市), Suangfeng (雙鳳) and Chitang (直塘). Steam-launches run between Kunshan and these towns four times a day, carrying mostly cereals.

Chihotang.—This river is the principal waterway between the walled cities of Taitsang and Kunshan, with launch services six times daily.

Liuho.—This river connects the city of Kunshan with Liuho by steam-launches running twice a day. Freight is usually carried by junk.

Chiputang.—This route starts from Shachi (沙溪), a prosperous town of Taitsang, and ends at Changshu, launches maintaining a service four times a day.

Yanglintang.—This river, connecting Taitsang and the thriving town of Fouchiao (浮橋) forms the principal route between the towns in the north-eastern part of the district and the walled city. Steam-launches run twice a day.

CHANGSHU

Important rivers traversing the district of Changshu are about 20 in number, providing 14 principal shipping routes, as follows:—

Yuanhotang (元和塘).—This is the most important waterway, connecting the city with Wuhsien, to which plan launches run four times a day.

Luhotang (六和塘) and Yangchientang (羊尖塘).—Those two creeks link Changshu with Wusih, and are navigable by steam-launches.

Wangchuangtang (王莊塘).—This river connects Changshu and Kiangyin, launches running every day.

Yulienchin (語廉涇) and Yiuchin (尤涇).—These two rivers provide three routes, one connecting Changshu and Shanghai, another connecting Changshu and Kunshan, and the third linking Changshu and Tsingyangkiang (青陽港).

The first route holds an important position in regard to communications between Shanghai and Changshu, as it passes through two districts of Kunshan and Kiating and many thriving towns. Steam-launches every day carry rice, cotton, fruit and cotton textiles from Changshu and on their return, bring general supplies for everyday use.

The second and third routes are less important, but launches run every day between Changshu and Kunshan, and twice a day between Changshu and Tsingyangkiang.

Wuchutang (五渠塘) and Paimaotang (白茆塘).—This route, starting from the city of Changshu and extending to Tungchangshih (東張市) in the eastern part, is the main artery of communication. These rivers pass Chitang (支塘) and Paimao (白茆) and are navigable by steam-launches.

Chinchuangtang (金莊塘) and Tsiputatang (七浦大塘).—These form the principal shipping routes between the eastern part of Changshu and the city of Taitsang, with launches running three times a day.

Meilitang (梅里塘) and Huputang (滸浦塘).—Starting from the town of Hupu (滸浦) and ending at Changshu via Meili (梅里), these waterways carry important traffic in the north-eastern section of the district, with steam-launch services three times daily.

Chowchin (周涇).—This is another traffic route in the north-eastern part of the district, starting from Laohoshih (老河市) to Changshu with daily launch services.

Kuanlutang (官祿塘).—This route runs between Changshu and Kushan (顧山) in the north-western part, steam-launches running every day.

Langchentang (浪澄塘), and Hsiangtang (塹塘) and Oushantang (鴎山塘).—These waterways bring Kanchiao (干橋) in the north-western section and the city of Changshu within easy reach. Launches run twice daily, passing through Hsihsushih (西徐市), Kangkou (港口) and Tayichiao (大義橋).

Sanchanpu (三丈浦) and Chungchin (中涇).—Another route in the north-western part of the district starts from Luyuan (鹿苑) to the city, steam-launches running twice a day.

Hsinantang (新安塘).—This river runs between Mochen (莫鎮) and Wuhsien. At normal times there are daily launch services.

WUSIH

Many waterways pass through the district of Wusih, including the Grand Canal (Kiangnan section), Liangchiho (梁溪河), Sihchen (錫澄), Litu (蠡瀆), Shatunkang (沙墩港), Chihukang (直湖港), Shuangho (雙河), Malikang (馬蠡港), Potukang (伯瀆港), Chuansuiho (轉水河), Nanhsingtangho (南興塘河), Peihsingtangho (北興塘河), Chienyutang (鮚魚塘), Changchin (張涇), Taho (大河) and Shentangho (盛塘河). Most of them are navigated by steam-launches, though in some narrow creeks only junks and sailing-boats can be handled. As the currents in all these rivers are slow-moving, navigation is easy especially in the Grand Canal, the Kiangnan section, of which runs from Chinkiang south to Hangchow, passing many important towns. The staple exports from Wusih are rice, wheat, cocoons, and cotton cloth.

KIANGYIN

Important waterways in the district of Kiangyin are the Grand Canal, Shantangho (山塘河), Yintienho (應天河), and Huangtienkang (黃田港), providing the following three routes—Kiangyin-Wusih, Kiangyin-Wuchin and Kiangyin-Changshu. Of these the Kiangyin-Wusih is the most important, a service between the two cities being maintained by steam-launches and junks carrying freight and passengers.

On the route from Kiangyin to Wuchin. launches carry coal, cotton yarn, cloth, rice, fish, and other supplies for daily use, while between Kiangyin and Changshu launches carry cotton yarn, cloth, and general freight.

WUCHIN

The important rivers passing through the district of Wuchin are as follows:—

Nanyunho (南運河).—This stream forms part of the Grand Canal, connecting Wuchin with Ihsing, Liyang, Sushan (蜀山) and Yanghsiang (楊巷). Both steam-launches and junks are busily engaged in carrying passengers and freight, mostly cereals.

Hsiyunho (西運河).—This is another section of the Grand Canal, linking Wuchin and Chintan, navigable by launches and junks.

Menho (孟河).—This creek runs between Wuchin and Yangchung. Being very shallow in places, it is navigable by launches only in summer.

Tungyunho (東運河).—This stream is also part of the Grand Canal, and is an important link communication between Wuchin and Wusih. It is 62.7 kilometres in length and six meters in width, and navigable throughout the year.

Chailinkang (採菱港).—This stream brings the towns in the south-eastern part of the district in touch, and is navigable all the year round. It is 39.9 kilometers in length and six meters in width.

IHSING

The only important river in the district of Ihsing is Nanyunho, part of the Grand Canal, and providing seven traffic routes, as follows:—

Wusih-Liyang.—This route passes Ihsing, and steam-launches run every day.

Wuchin-Liyang.—This route also includes Ihsing thus, providing easy communication between Ihsing and Wuchin and Liyang. A launch runs on alternate days.

Wusih-Fangchiao.—This route connects Wusih with Fangchiao (芳墟), a town in the south-eastern part of the district, with launches running every day.

Hucha-Changtsu (湖汶—張渚).—Connecting various towns in the eastern and western parts of the district by a daily launch service.

Wuchin-Hucha.—This route starts from Huchen (湖鎮) to Wuchin via Hochiao (和橋), Tinshan (鼎山) Sushan (蜀山), launches running daily.

Wuchin-Ihsing.—Connects Wusih with Ihsing by a daily launch service.

Ihsing-Wusih.—Steam launches, carrying mostly cigarettes and cotton yarn, run every day between Ihsing and Wusih.

LIYANG

The rivers in the district of Liyang are the Meichuho (梅渚河), Shechuho (社渚河), Shangpeipuho (上沛埠河), Chukuichiaoho (竹貢橋河), Nantuho (南渡河), Yuntsaoho (運曹河), Taipukang (載埠港), and Shanghsingpuho (上興埠河), all navigable throughout the year.

Of the above the Nantuho and Yuntsaoho are the largest and are navigated by steam launches, the rest being open to sailing boats only. The Nantuho is of great importance in the district of Liyang, while the Yuntsaoho forms the principal water route connecting Liyang with other districts of Tanyang and Chintan, launches running twice a day.

KAOSHUN

There are four rivers flowing through the district of Kaoshun, the Kuanchiho (官溪河), Fengchenho (豐成河), Kuchenho (固城河) and Changchaoho (長肇河), particulars being described below:—

Kuanchiho.—This river, 51 kilometres in length and 30 metres in width, empties into the Kuchenhu (固城湖), and thence flows to Wuhu, in Anhui Province, forming the principal water route between the two districts. The current is slow, and during the dry winter season only junks and other sailing boats can be used. Cargoes carried are mostly cereals and sundries.

Fengchenho.—This is a shallow river which runs from Kuchenhu to Chenkouhu (澄溝湖) into the Tanyanghu (丹陽湖). As it is fed mainly by mountain streams in the vicinity, the navigable season by sailing boats lasts only from July to October.

Kuchenho.—With a length of 28.5 kilometres and a width of 15 meters this stream forms an important link between the city of Kaoshun and various towns and villages of the district. Its slow current renders it navigable by both launches and sailing boats for three seasons of the year.

Changchaoho.—This river has a length of 13 kilometres and a width of 9 meters, and flows into the Shihchiuhu (石臼湖). Sailing boats can make use of this stream in summer and autumn, but at other seasons it is too shallow.

LISHUI

Only one river, the Hsinhuimingho (新惠明河), flows through the district of Lishui to Kiangning. During summer and autumn sailing boats maintain a service every other day, carrying rice, wheat, oil, salt, sugar, and sundries.

KIANGNING

The only important river passing through the district of Kiangning is the Chinhuaiho (秦淮河), providing two routes, as follows:—

Nanking-Lishui—.This connects the two cities named, and steam-launches also call at Hsiakuan (下關). Agricultural products are mostly shipped away by sailing boats.

Nanking-Hushu.—This line connects Nanking with various villages and towns in the district, steam-launches running daily. The service extends northward to Hsiakuan, having a total length of 57 kilometers.

KIANGPU

Rivers in the district of Kiangpu are the Chikiangho (直江河), Chuchiashanho (朱家山河), Chumaho (駐馬河), Shihtsihho (石蹟河), and Huitungho (會通河).

The Chikiangho runs between Kiangpu and Kiangning, being navigable by sailing-boats from April to September.

The Chuchiashanho provides the main transportation route between the northern and southern parts of the district. In the period from April to September the river is navigable by sailing-boats, loading chiefly cereals, cotton, and sundries.

The Chumaho, in the western part of the district, links Wukiangchen with Kiangkou (江口), and is navigable by sailing-boats only from April to September, while the Shihtsihho is the main waterway in the southern part, with April to September as a navigable season, and the Huitungho, though larger than the others, is also navigable between the same months.

CHUYUNG

As only the Hsinhuimingho flows through the district of Chuyung, it forms the sole astery of communication. It connects Chuyung with Kiangning, and during the navigable months of summer and autumn sailing-boats carry rice, wheat, and sundries.

LUHO

Two rivers flow through the district of Luho, the Chuho (滁河) and Yangtse.

The lower valley of the Chuho gives two links of communication, one connecting Luho and Kiangning, and the other linking Luho with Chinkiang. The first route is navigable by steam-launches, carrying cereals and silk.

The Yangtse runs from Hsiakuan to Luho, with launch service twice a day.

As highway communication with Nanking and Chinkiang is impossible in Luho, these rivers provide the only line of communication.

ICHENG

The river Iho (儀河), in the district of Icheng, is the only waterway running between that district and

Kiangtu. Sailing boats carrying mostly cereals and salt are the only means of communication.

CHINKIANG

Important waterways in the district of Chinkiang are the Yangtse and Grand Canal. The former provides four lines of communication, one connecting Chinkiang with Kiangning, one to Luho via Kiangtu, and the other two running to Yangchung, the latter also linking Chinkiang with Tsingkiangpu and Wuhsien.

CHINTAN

The rivers in the district of Chintan are the Tsaoyunho (漕運河), and Tachi (大溪), both being navigable for steam launches during the deep water season. The former provide three routes, one linking Chintan with Tanyang and Liyang, another with Pennieu (奔牛), and the third joining up with Wuchin. Steam-launches running on these routes carry cocoons, rice, wheat, and other cereals. Traffic routes on the Tachi are two in number, one from Chintan to Chinkiang and the other from Chintan to Sihpu (詳埠).

TANYANG

Five rivers traverse the district of Tanyang, details being as follows:—

Mituho (珥漬河).—This river, having a length of 22.8 kilometers and a width of 12 meters, runs between Tanyang and Chintan, being navigable by launches throughout the year except during winter.

Chiuchuho (九曲河).—17 kilometers in length and 12 meters in width, this stream empties into the Yangtse. Steam navigation will be opened shortly.

Shiangtsaoho (香草河).—This is the principal waterway connecting the city with various nearby villages and towns, having a length of 22.8 kilometers and a width of 15 meters. Motor-boats are now providing means of communication, running daily carrying beans, wines, and rice.

Grand Canal.—That part of the Grand Canal passing through Tanyang to Chinkiang is 57 kilometers long and 15 meters wide. Motor-boats run between these two points every day, carrying mostly rice, beans, and vinegar.

Chientuho (簡瀆河).—This river connects Tanyang with various towns and villages, being navigable by sailing boats which mainly carry beans, wheat, rice, and wine.

YANGCHUNG

As Yangchung is surrounded by the Yangtse, communication with other districts is dependent upon that river. There are three regular routes, one from Yaochiachiao (姚家橋) to Chinkiang and one from the city to Wuchin, both being navigable by steam launches, while the third from Yangchung to Chinkiang is navigable by sailing boats only.

TAIHSING

Important rivers traversing the district of Taihsing are the Chiang-chin-shi-ho (羌淨市河), Chiang-huang-ho (姜黃河), Laolungho (老龍河), Lichiaho (李家河) and Miaokang (廟港). The first three serving the purpose of communication within the district, while the last two connect Taihsing with Taihsien and Kiangtu, all being navigable by sailing boats.

KIANGTU

Two important rivers flow through the district of Kiangtu, the Liyunho (裏運河) and Chuanchangho (串場河), both of which are of vital importance in providing communication among the many districts north of the Yangtse.

The Liyunho provides many shipping routes, either to Chinkiang, Taihsien, Kaoyu, Paoyin, or Huaiyin, steam-launches running two or three times daily. By the Chuanchangho the districts of Kiangtu, Taihsing, Tungtai, Shaopo, Nantung and Yencheng are brought into touch. Being 171 kilometers in length, this river is mainly depended upon for transportation in these districts.

KAOYU

Waterways in the district of Kaoyu are the Grand Canal and the Yunyenho (运鹽河). The former runs between Kaoyu and Huaiyin, being navigable by both steam-launches and sailing-boats, while the latter, 114 kilometers long, is the main waterway connecting the villages and towns within the district, being navigable by launches for eight months in the year.

PAOYIN

River passing through Paoyin are the Liyunho, Shihho (市河), and Kangho (港河). Liyunho is a waterway on which launches ply all the year round. The Shihho, 28½ kilometers long, and the Kangho, 34 kilometers in length, provide communication within the district, both being navigable by junks, which carry rice, wheat, and other cereals.

HUAIAN

Several rivers pass through the district of Huaian, including the Liyunho, Chienho (淵河), Hsinho (新河), Chinho (涇河) and Shinho (尋河). The Liyunho is the principal waterway, connecting Huaian with Huaiyin and Chinkiang; the Chienho and Chinho link Huaian with Yencheng, while the Hsinho and Shinho are of great importance in irrigating the western and southern parts of the district in addition to providing communication between the villages and towns in those parts. Steam-launches can only use the Liyunho, while the streams are navigable by junks. Among the freight carried are cereals, rice stalks, eggs, tobacco, charcoal, and lotus root.

HUAIYIN

Waterways in the district of Huaiyin are the Grand Canal, Yenho (鹽河), Changfuho (張福河) and Lutangho (六塘河). The Grand Canal not only affords communication but supplies drinking water and touches both Chinkiang and Suchien, steam-launches, motor-boats, and sailing-boats in the deep water season carrying oil, timber, charcoal, cereals and pigs.

The Yenho, linking Huaiyin with Kuanyun and Panpu (板浦), is the main waterway for transporting salt, and from February to June steam-launches run every three days.

The Changfuho empties into the Hungtsehu (洪澤湖) and the Lutangho connects Ssuyang, both being used in connection with salt transportation.

SSUYANG

The waterways in the district of Ssuyang are two, the Grand Canal and the Hungtsehu. This section of the Grand Canal, 79 kilometers long, forms an important link between Ssuyang, Suchien and Huaiyin, being navigable by steam-launches and junks throughout the year except in the winter, when the canal is frozen.

The Hungtsehu, situated between the borders of Kiangsu and Anhui, is the principal line of communication among various districts of the hsien, and also with Chuyi (盱眙) in Anhui Province.

SUCHIEN

The only waterway passing through the district of Suchien is the Grand Canal, which provides communication with Huaiyin, Huaian, Paoyin, Kaoyu, Kiangtu and Chinkiang. Launches and junks ply all the year round.

SHUYANG

Chienshuho (前沭河), 148 kilometers in length, is the only river to connect Shuyang with Kuanyun. The current is slow, and the stream is navigable by sailing-boats all the year round. Cargoes carried consist mainly of cloths, cotton yarn and cereals.

SUINING

Though several rivers flow through the district of Suining, none are navigable, being too shallow for even small craft.

TUNGSHAN

The important rivers of this district are the Kuiho (奎河), Fangtingho (房亭河), Kinshanho (荆山河) and Yuhuangho (淤黃河). The Kuiho is 34 kilometres in

length and runs through Kuishan (奎山), Hsushantsun (徐三村), and Yangchuang (楊莊). The Fangtingho is a stream of eight kilometres in the north-eastern part of the district, passing through Tungtientse (東店子), Houchiyu (侯集圩), and Shanchuang (單莊) in its course. The Kinshanho is also in the north-eastern part of the district, passing through Liangshanyu (梁山圩) and Piengtang (卞塘), in its course of 60 kilometres. Yuhuangho runs across the southern part of the district for a total length of 180 kilometres and passes through Tungshan, Pengchuangchai (彭莊砦), Hochai (郝砦) and Shuangkouchen (雙溝鎮).

HSIAOHSIEN

In this district there are several small rivers, the Lungho (龍河), Taiho (岱河), Maochiangho (毛蔣河), Hungchienho (洪減河) and Chaho (閘河) being the more important ones. As these streams are navigable only during a very short period of the year, they are of no economic importance except for irrigation purposes.

TANGSHAN

The important rivers in this district are the Limingho (利民河), Chienho (減河) and Huakiapuho (華家坡河), The Limingho starts from Yotikou (岳堤口) and runs in a south-eastern direction to Yungfeng (永豐), the entire length in the district being 62 kilometres. As many portions of this river have dried up, navigation is impossible. The Chienho has three branches, the Eastern, Western, and Central, but owing to the shallowness of the river beds, navigation is impossible, though dredging work is being carried on.

Huakiangpuho, running a course of 13 kilometres in the district, is the principal stream in the northern part. It starts from Tachaipei (大寨北) and ends at Fengching (豐境), passing through Chouchai (周寨) and Chiachai (賈寨).

FENGHSIEN (豐縣)

The Fuhsingho (復新河), traversing the district from north to south, is the principal stream in this district, and connects the city of Fenghsien with outlying rural sections and a number of villages, among which the principal are Mengtikou (孟堤口), Changtien (常店) and Kungchiao (龔橋). This river is the principal line of communication in the district, and in the deep-water season of July and August is crowded with sailing-boats carrying passengers and merchandise. The length of the river in this district is approximately 53 kilometres.

PEIHSIEN (沛縣)

The Grand Canal and Yenho (沿河) are the two important waterways in this district. The former enters the district at Wangkou (王口) and leaves it at Liuyangchuang (劉陽莊), running a course of 28.5 kilometres. Despite the strong current, the river is navigable throughout the year. The Yenho, having a length of 17 kilometres, lies entirely within this district, passing through Shansoulou (三所樓) and Chenwangchuang (甄王莊). The navigable seacon lasts from July to October.

PEIHSIEN (邳縣)

Communication by water is very easy in this district, as it is traversed by the Grand Canal and the Niho (沂水). The Grand Canal has a length of 71 kilometres in the district, connecting Taierchuang (台兒莊) and Yaowan (窯灣) and passing through Tanshang (灘上), Hsutang (徐塘), and Maoerwo (猫兒窩). Sailing-boats can be used throughout the year. The Niho is 48 kilometres in length, starting from Lutao (駱道) and flowing into the Grand Canal at Yaowan (磁灣) and is navigable by sailing boats from April to September.

TUNGHAI

The important rivers in this district are three, as follows:

Linhungho (臨洪河).—This is the waterway leading from this district to Shanghai and Tsingtao. The total

length is 23 kilometres, the section in Tunghai being 11 kilometres. It is navigable by steam-launches and sailing boats throughout the year. Merchandise imported into or exported from Tunghai is chiefly carried by this route.

Hsiangweiho (蕎薇河).—This river, with a length of 51 kilometres, is navigable during the summer and autumn. It starts from the district of Shuyang and flows into Linghungho, passing through Chiafang (甲坊), Changwan (張灣), Tafuting (大夫廳) and Chaochi (趙集).

Yenho (鹽河).—This river, lying at the eastern part of the district, forms the principal line of communication between this district and Kuanyun, the total length being 26 kilometres, navigable by sailing-boats throughout the year.

KUANYUN

The Yenho (鹽河) and Kuanho (灌河) are the two important rivers flowing through this district. The former, running southward from Panpu (板浦) and ending at Hsipa (西垻), crossing the district of Liensui, is an important line of communication between these districts. Its total length is 138 kilometres, the section within Kuanyun being 60 kilometres, and is navigable by launches and sailing-boats during the summer and autumn. The Kuanho lies entirely within the boundary of the district, and flows into the Yellow Sea. It connects the city with the rural sections, and is 57 kilometres in length, passing through Hsinanchen (新安鎮), Hsiangsuikou (响水口) and Chenchiakang (陳家港).

KANGYU

The rivers in this district, such as the Chuchiho (朱稽河), Tawangho (大汪河), Tashaho (大沙河) and Hsiaoshaho (小沙河), are extremely shallow and innavigable, but are useful for irrigation purposes.

LIENSUI

The important river in this district number three, as follows:

Yenyungho (鹽運河).—This stream starts from Huaiyin and flows into the Yellow Sea in the district of Tunghai, passing through the districts of Liensui and Huaiyin. It is an important line of communication between these districts, as considerable quantities of salt, foodstuffs, and building materials are transported by sailing-boats during summer and autumn. Formerly, a steamboat company, with several launches, was operating on this route, but it closed down recently.

Nanlutangho (南六塘河).—Starting from Paoho (包河), in the district of Huaiyin, and terminating at Toutukou (頭渡口), in the district of Kuanyun, this river constitutes the main line of communication between those two districts and Liensui. The section in Liensui is about 17 kilometres in length.

Peilutangho (北六塘河).—Starting from Huaiyin and terminating at Kuanyun, this river passes the districts of Liensui and Shuyang, forming a connecting link between these districts. It is navigable during summer and autumn, the section in Liensui being about 11 kilometres in length.

FOUNING

The Iyangho (射陽河), Chuanchangho (串場河) and Chiushengho (救生河) are the principal streams in this district. The first, being the outlet of Iyang Lake, traverses the district and flows into the Yellow Sea, its entire course being 170 kilometres in length. With the exception of one section near its mouth, the river is navigable throughout the year, and the Ta Yuan Steamboat Company (大源輪船公司) has a service in operation. The Chuanchangho starts from Yencheng and joins the Iyangho in the district of Founing, forming the connecting link between Yencheng, Tungtai, Taihsien and Founing. The river has a length of 68 kilometres, the section in Founing being 26 kilometres long, and is navigable all the year round by launches and sailing-boats. Two steamboat companies, the Ta Ta (大達) and Ta Sheng (大生) are in operation. The Chiushengho, starting from the city of Founing and ending at Tungkan (東坎), is the connecting link between the city and rural

sections, and is navigable throughout its entire course of 28 kilometres at all seasons. The Fou Tung Steamboat Company (阜東輪船公司) maintains a service on this stream.

YENCHENG

The following are the principal rivers in the district of Yencheng:

Hsing-yen-chai-ho (興鹽界河).—This river starts from Ta Chung Lake (大縱湖) and terminates at Toulung-kang (鬥龍港), its entire course being 51 kilometres in length, navigable all through the year.

Mangsheho (蟒蛇河).—This river runs from Shakou (沙溝) to Hsingyangkang (新洋港), a distance of 54 kilometres, and is navigable throughout the year.

Hsitangho (西塘河).—This river, 57 kilometres in length, forms the connecting link between Yencheng and Founing, and is navigable by launches and sailing-boats the year round.

Chuanchangho.—This river, 71 kilometres in length, is an important link between Yencheng, Hsinghua, Taihsing and Founing. The entire course is navigable throughout the year.

Kangkouho (岡溝河).—This river, starting from Takanghsiang (大岡鄉) and terminating at Kangmeng (岡門), is the principal stream in the southern part of the district, having a course of 28 kilometres, navigable by sailing-boats at all seasons.

Pangyenho (蚌沿河).—This river, running a course of 46 kilometres, connects the city with Tihokou (堤河口), and is the main communication line between the city and the country, being navigable by launches and sailing boats throughout the year.

Tungkuanho (東官河).—Running form Takanghsiang to Kangmeng, this river connects several rural sections. The entire course is 28 kilometres in length, and is navigable by sailing-boats.

Hsikuanho (西官河).—Being navigable by sailing boats and launches, this river is also an important link between the various parts of the surrounding country. It is 30 kilometres in length.

Pishaho (皮沙河).—Starting from Kuchissu (古集寺) and terminating at Tienfeicha (天妃閘), this river is 27 kilometres in length, navigable by launches and sailing-boats.

HSINGHUA

In this district, communication by water is facilitated by the presence of numerous streams and lakes, among which the more important ones are the Hsiakuanho (下官河), Shangkuanho (上官河), Nankuanho (南官河), Shakouho (沙溝河), Chuanchangho (串場河), Peichentseho (北澄子河), Chailuho (車路河), Pingwang Lake, (平望湖), Chili Lake (七里湖), Tachung Lake (大縱湖), Wukung Lake (吳公湖), and Tehsheng Lake (得勝湖), providing five main routes as follows:

Hutu-Taihsien.—This route, formed by the Nankuanho, Hsiakuanho and Pingwang Lake, starts from Taihsien and terminates at Hutu (湖垛), running through Chouchiachuang (周家莊), Lintingchen (凌亭鎮) and Shakouchen (沙溝鎮). A large number of launches and sailing-boats are constantly operating on this route, and considerable quantities of foodstuffs and other merchandise are transported. The whole route is 148 kilometres in length, the section in Hsinghua being 68 kilometres long.

Yencheng-Taihsien.—Formed by the Nankuanho, Shangkuanho, Wukung Lake and Tachung Lake, this route links the three districts of Yencheng, Hsinghua and Taihsien. It is 137 kilometres in length, the section in Hsinghua being 68 kilometres long. Launches and sailing-boats carrying passengers and merchandise use this route.

Hsinghua-Liuchuang.—Being the principal waterway between the city of Hsinghua and various rural sections, this route, 68 kilometres in length, lies entirely within the boundary of Hsinghua. Sailing-boats and launches are available.

Hsinghua-Kaoyu.—This route links the districts of Hsinghua and Kaoyu, its length being 55 kilometres. Although navigable by launches, this service has been suspended, and only sailing-boats are in use at present.

Hsinghua-Tungtai.—This route, consisting of the Chailuho and Chuangchangho, constitutes the main waterway between Hsinghua and Tungtai. A steamboat company, organized by local merchants, is in operation.

TUNGTAI

Chuanchangho (串場河).—This river, connecting the four districts of Taihsien, Yencheng, Founing and Tungtai, is 217 kilometres in length, the section in Tungtai being 43 kilometres long. It is navigable by both launches and sailing-boats. Merchandise transported on this river consists principally of salt, beans, wheat, and native cloth.

Yungyenho (通鹽河).—The section in this district is 46 kilometres in length, passing through Yuchi (淤溪), Chentung (溱潼) Shinien (時埝) and Tungtai. It is navigable throughout the year.

Pangyenho (蚌沿河).—This river, starting from Hsiefeng (斜豐) and terminating at the city of Tungtai, is 51 kilometres in length and lies entirely within the boundary of the district. It is navigable thoughout the year.

Toulungkang (門龍港).—Also entirely within the district, this river is the main line of communication between the north-eastern rural sections, and during the deep water season in autumn, is the principal route for incoming sea-going junks. The river is 148 kilometres in length.

Wangkang (王港).—This river, starting from Chaonien (草埝) and emptying into the Yellow Sea, is 114 kilometres in length, and is also much used by incoming sea-going junks.

Chukang (竹港).—Starting from Tingchi (丁溪) and flowing into the sea, this river is 114 kilometres in length, in addition to being an important link between the eastern rural sections of the district, it is a route constantly used by incoming sea-going junks.

TAIHSIEN

The Tung-yang-yung-ho (通揚運河), Yenyungho (鹽運河), and Lutingho (滷汀河) are the important streams in this district. The Tung-yang-yung-ho starts from Kiangtu and terminates at Nantung, passing through Taihsien and Jukao, the section in Taihsien being 74 kilometres in length. It is an important outlet of the Grand Canal and of great service for irrigation. The entire course is navigable by launches and sailing-boats, goods transported consisting largely of rice and cotton. The Yenyungho starts in Taihsien, passes through Hsinghua, and terminates at Yencheng, being a important line of communication between these districts. The whole course is navigable except in winter. The Lutingho runs a course almost parallel to the Yenyungho, traversing the same districts, and is also navigable except in winter.

JUKAO

The following are the important rivers in this district:

Yenyungho.—The section of this river in Jukao is 62 kilometres in length, passing through the city and a number of populous villages. Launches and sailing boats are available all the year round.

Chuanchangho.—Starting from Tingnien (丁埝) and ending at Chukang (椐港), this river lies entirely in the district, and is the principal link between various rural sections. Except during winter, it is navigable by launches and sailing-boats.

Lungyuho (龍洈河).—This river starts from the city of Jukao and terminates at Hsingkang (新港), running a course of 34 kilometres. It is a waterway connecting various important villages in the district, and is navigable by sailing-boats.

Chouyukang (周圩港).—This river, starting from Kiangkou and entying into Tutungkang, forms an important waterway between various places and the Yangtse River. The whole course is 11 kilometres in length.

Nientukang (碾砣港).—This river starts from Lichiachiao (李家橋) and empties into the Yangtse, the entire course being 17 kilometres in length. It is navigable by sailing-boats throughout the year.

Hsiaochiho (小溪河).—This river, lying in the western part of the district, is an important waterway between the city of Jukao and the surrounding country, the whole course being 23 kilometres in length.

Pei-chuan-chang-ho (北串場河).—Starting from Lifa (立發) and ending at Pingcha (栟茶) in Tungtai, this river connects these two districts. It is 40 kilometres in length and navigable by sailing-boats throughout the year.

Lingho (菱河).—This stream starts from Tungchen (東陳) and terminates at Pincha, being 34 kilometres in length. Owing to the accumulation of silt, the water is so shallow that only sailing-boats of very small size can be used on this stream.

TSINGKIANG

The following are the important streams in this district:

Payukang (八圩港).—This river, 12 kilometres in length, forms a connecting link between the Kuanti Ho and the Yangtse. It is an important waterway joining the various places in the 1st and 7th sections of the district. Sailing boats can be used throughout the year.

Chaichiakang (蔡家港). This river connects the Tsingtaichiaho (靖泰界河) in the north and Chenkung-kang in the south, passing through Wuchia (吳家) and Hsingshih (新市). It is navigable by sailing-boats throughout the year.

Miaoshukang (廟樹港).—Connecting with the Tsing-tai-chia-ho (靖泰界河) in the north and the Chenho (城河) in the south, this stream lies in the western part of the district. The whole course is navigable by sailing boats, goods transported consisting principally of agricultural products.

Hsiassukang (夏仕港).—This river has its source in the boundary stream between Jukao and Tsingkiang and empties into the Lungtaikang (龙潭港), and is the main line of communication between the north-eastern rural sections. Sailing-boats can be used throughout the year, their cargoes consisting chiefly of agricultural products.

Chenkungkang (陳公港).—Joining Chaichiakang (蔡家港) in the north and Luyukang (六圩港) in the south, this stream, though only 3½ kilometres in length, is an important link between the western rural sections, its whole course being crowded with sailing boats carrying merchandise.

Hsia-lu-yu-kang (下六圩港).—This stream leads from Chenkungkang to the Yangtse, being 8½ kilometres in length. Sailing boats can be used all the year round.

NANTUNG

The following are the principal streams in this district:

Tiensenkang (天生港).—Starting from Tangchiachai (塘家宅) and emptying into the Yangtse, this stream is an important waterway connecting various sections of the district, and at the same time, it serves as an outlet of the Yenyungho. The entire course is 6.8 kilometres in length. Boats loaded with cotton goods on this river throughout the year.

Yungyenho.—Starting from Lussu (呂四) and terminating at Kiangtu, this river traverses the entire district of Nantung, and is the main line of communication between Nantung and neighboring districts. The section in Nantung is 171 kilometres in length, and sailing-boats and launches are in operation throughout the year.

Jenkang (任港).—This river leads from Yenchangpa (鹽倉壩) to the Yangtse, and is an important waterway connecting various rural sections of the district.

Yaokang (姚港).—This stream starts from Hsikungyuan (西公園) and flows into the Yangtse, forming the sole channel between the south-western part of the district and other points along the Yangtse River.

Yangtse.—The section of the Yangtse in this district is 42 kilometres in length, passing through Jenchiachen (任家鎮), Tiensenchen (天生鎮), and other places.

HAIMEN

There are a considerable number of rivers in this district, the more important being the following:—

Yangtse.—The section of the Yangtse flowing through this district is 45 kilometres in length, forming the principal line of communication between Haimen and other parts of the Province. At the mouth of every outlet to the Yangtse there is a station of the Shunsha Steamboat Company (申沙聯合輪船公司), and at each of these stations, service to Shanghai, Chitung, Tsungming, and other places is available.

Chungsingho (中心河).—Running from Chuankang (川港) to the sea, this river of 80 kilometres traverses the entire district, and is an important waterway connecting Haimen and Nantung. The whole course is navigable by sailing-boats throughout the year.

Lingtienkang (靈甸港).—This river starts from the stream between Nantung and Haimen, and empties into the Yangtse, connecting various rural sections of the district. It is navigable by sailing boats throughout the year.

Hsinkang (新港).—This stream starts from Hsinhochen (新河鎮) and flows into the Yangtse, forming the connecting link between Haimen and Nantung, and is deep enough to be navigable even by heavily-loaded junks. Freight transported on this route consist principally of cotton goods and groceries.

Sungchikang (宋季港).—This river runs from Luchapa (六甲壩) in Nantung to the sea, and is navigable by sailing-boats and junks throughout the year.

Chaipaikang (界牌港).—Running to the sea from the boundary between Nantung and Haimen, this stream lies entirely in Haimen, and is an important waterway connecting various rural districts and villages. Sailing-boats and junks ply throughout the year.

Niuhungkang (牛洪港).—This river, joining Chiangchaokang (姜灶港) and the Yangtse, is also an important waterway between Nantung and Haimen, and is navigable by sailing-boats and junks the year round.

Taankang (大安港).—Running from Tung-hai-chiaho (通海界河) to the Yangtse, this stream provides a convenient line of communication between various villages in the district, its entire course being navigable by sailing-boats and junks.

Hutungkang (滸通港).—This river connects Yuanchaokang (袁灶港) in Nantung with the Yangtse. It is an important waterway, linking various villages in Haimen and Nantung.

Haichaikang (海界港).—This stream links the town of Huaitung (匯通鎮) with Yangchiachiao (楊家橋), and is navigable throughout the year by junks and sailing-boats.

Chinglungkang (青龙港).—Starting from Ssuyangpa (四陽壩) and terminating at the Yangtse, this river is the main line of communication between Ssuyangpa, of Nantung. It is navigable throughout the year by sailing boats and junks.

CHITUNG

The principal waterways in this district are the Chuanhungkang (川洪港), Yunglungkang (永隆港), Tung-i-hao-kang (東一號港) and Yatoukang (鴨頭港). The Chuanhungkang starts from Chiulungchen (久隆鎮) and empties into the Yangtse. It lies entirely within the boundary of the district, and is the main line of communication between various rural sections. Although heavily-loaded junks can move on it freely, no steam-launch service is yet available. The Yunglungkang also lies within the district, and is navigable by sailing-boats and junks. The Tung-i-hao-kang leads from Huilungchen (惠隆鎮) to the Yangtse, while the Yatoukang runs from Huilungchen (惠龍鎮) to the Yangtse, both being navigable by sailing-boats.

CHAPTER IV

POSTAL SERVICE

SIR Robert Hart, Inspector-General of Customs, first suggested the idea of establishing post-offices in China, but the plan did not materialize until 1878, two years later, when post-offices were established at Peking, Tientsin, Chefoo, Newchwang and Shanghai, and maintained under the direction of the Customs authorities. With the opening of treaty ports in China, foreign merchants frequently established their own mail-stations, and this caused considerable friction between Chinese and foreign authorities. In 1895 Mr. Chang Chih Tung (張之洞) sent a petition to the Government, demanding the immediate establishment of a uniform postal system in China, and eventually this was done. With the co-operation of foreign goverments a uniform postal service was inaugurated in 1911, operating independently of the Customs.

In 1907 in Kiangsu Province the foreign post-offices established at Shanghai were one British and one French, three German offices at Shanghai, Nanking, and Chinkiang, one Russian at Shanghai, and four Japanese post-offices at Shanghai, Wuhsien, Chinkiang, and Nanking. These foreign stations were all abolished in 1922, since when China has operated her own postal service.

DISTRIBUTION

Kiangsu Province was divided into two postal districts the Kiangsu and the Shanghai districts, but in 1930 the former was combined with the Anhui district, the whole being known as the Su Wan district (蘇皖).

SU-WAN DISTRICT (KIANGSU SECTION)

In Kiangsu Province, excluding the Shanghai district, there is one post administration office, four first-class post offices, 69 second class, 54 third class, 26 sub-offices and 632 agencies, making a total of 786. There are 134 city collection boxes, 463 rural collection boxes, 389 rural stations, and 165 stamp-selling agencies, making a grand total of 1,151. The Postal Administration head office is established in Nanking, supervising postal matters all over the Province, districts under its control being Nanking, Wukiang, Wuhsien, Changshu, Wusih, Kiangyin, Wuchin, Ihsing, Liyang, Kaoshun, Lishui, Kiangyin, Chuyung, Kiangpu, Luho, Icheng, Chinkiang, Chintan, Tanyang, Yangchung, Taihsing, Kiangtu, Kaoyu, Paoying, Huaian, Huaiyin, Ssuyang, Suchien, Tungshan, Hsiaohsien, Tangshan, Fenghsien, Peihsien, Tunghai, Kuanyun, Kangyu, Lienhsui, Founing, Yencheng, Hsianghua, Tungtai, Taihsien, Jukao, Tsingkiang, and Nantung. The following table shows the distribution of post-offices in various *hsien*:

	Head Office	1st Class	2nd Class	3rd Class	Total
Nanking	1	0	2	0	3
Wukiang	0	0	2	5	7
Changshu	0	0	2	1	3
Wuhsien	0	1	3	0	4
Wusih	0	1	0	2	3
Kiangyin	0	0	1	1	2
Wuchin	0	0	2	2	4
Ihsing	0	0	1	3	4
Liyang	0	0	1	0	1
Kaoshun	0	0	1	0	1
Lishui	0	0	1	0	1
Kiangning	0	0	1	0	1
Chuyung	0	0	1	3	4
Kiangpu	0	0	2	1	3

Luho	0	0	1	0	1
Icheng	0	0	2	0	2
Chinkiang	0	1	2	4	7
Chintan	0	0	1	0	1
Tanyang	0	0	1	1	2
Yangchung	0	0	0	1	1
Taihsien	0	0	3	0	3
Kiangtu	0	0	4	2	6
Kaoyu	0	0	3	0	3
Paoyin	0	0	1	1	2
Huaian	0	0	1	1	2
Huaiyin	0	0	2	0	2
Ssuyang	0	0	1	1	2
Suchien	0	0	1	3	4
Shuining	0	0	0	1	1
Tungshan	0	1	0	2	3
Hsiaohsien	0	0	0	2	2
Tangshan	0	0	1	0	1
Fenghsien	0	0	0	1	1
Peihsien	0	0	1	0	1
Peihsien	0	0	2	3	5
Shuyang	0	0	1	0	1
Tunghai	0	0	2	0	2
Kuanyun	0	0	1	2	3
Kangyu	0	0	1	0	1
Leishui	0	0	0	1	1
Founning	0	0	2	1	3
Yencheng	0	0	3	2	5
Hsinghua	0	0	1	0	1
Tungtai	0	0	1	3	4
Taihsien	0	0	4	1	5
Jukao	0	0	2	0	2
Tsingkiang	0	0	1	0	1
Nantung	0	0	3	3	6
Total	1	4	69	54	128

SHANGHAI

In Shanghai there is one Postal Administration Office, 32 second-class offices, 13 third-class, 25 sub-offices, 85 agencies, 28 city collection boxes, 224 rural collection boxes, 408 rural stations and stamp-selling agenies, making

a grand total of 739. The head office is in Shanghai, with sub-offices in various *hsien*, including Shanghai Municipality, Shanghai Hsien, Nanhui, Fenghsien, Sungkiang, Chuansha, Tsingpu, Chinshan, Kunshan, Kiating, Paoshan, Tsungming, Taitsang, Haimen, and Chitung. The following table shows the distribution of offices in various districts:

	Head Office	Second Class	Third Class	Total
Municipality of Greater Shanghai and Shanghai Hsien..	1	7	1	9
Nanhui	0	2	2	4
Fenghsien	0	1	0	1
Sungkiang	0	2	2	4
Chuansha	0	1	0	1
Tsingpu	0	2	0	2
Chinshan	0	2	0	2
Kunshan	0	1	2	3
Kiating	0	2	2	4
Paoshan	0	1	1	2
Tsungming	0	2	2	4
Taitsang	0	3	0	3
Haimen	0	3	1	4
Chitung	0	3	0	3
Total	1	32	13	46

SERVICES

Services rendered by post-offices consist of mail delivery, parcel delivery, stamp sales, domestic remittances, and savings bank, each department being treated separately as follows:

MAIL

Mails are classified into two groups according to service and according to the quality of matter.

According to service mails are divided into ordinary and special, the latter being express, registered, and insured mails. According to the 1932 returns published by the Ministry of Communications, mail deliveries in Kiangsu Province were as follows:—

	Ordinary	Registered	Express	Insured
1919	25,747,400	1,586,500	884,800	656
1920	31,778,100	1,932,900	891,400	576
1921	29,019,000	1,770,200	820,400	599
1922	25,973,300	1,582,600	714,900	430
1923	28,348,900	1,149,600	730,100	500
1924	31,453,900	1,283,300	827,000	800
1925	34,398,300	1,344,200	891,800	600
1926	36,536,500	1,401,800	905,400	500
1927	31,638,200	1,200,500	859,800	2,700
1928	52,614,500	1,717,400	1,255,000	4,600
1929	55,364,200	2,212,900	1,471,200	3,800

The following shows details of mail deliveries in Shanghai:—

	Ordinary	Registered	Express	Insured
1919	68,612,300	1,788,000	983,600	2,929
1920	79,132,500	2,075,900	1,116,100	2,204
1921	92,460,900	2,686,600	1,344,600	2,064
1922	69,424,800	1,592,100	920,100	2,300
1923	92,457,500	2,333,100	1,333,400	7,408
1924	108,339,500	2,742,200	1,109,900	15,132
1925	114,527,900	2,914,000	1,107,600	18,063
1926	130,460,900	2,998,600	1,071,700	20,100
1927	122,757,300	2,551,600	1,037,300	24,800
1928	137,415,895	3,361,100	1,342,000	35,205
1929	161,866,300	4,031,600	1,514,400	33,100

According to quality, mails are subdivided into letters, cards, newspapers, books, notices, contracts, and samples, statistics for Kiangsu Province being shown in the following table:—

KIANGSU DISTRICT

	Letters	Post Cards	Ordinary or Special Mark Newspapers	Bulk Newspaper	Printed Matters and Books	Unaddressed Trade Circulars	Commercial Papers	Samples
1919	17,784,956	8,034,000	—	—	2,311,600	—	51,300	37,500
1920	22,413,176	9,029,000	—	—	3,055,600	—	61,700	43,200
1921	20,521,399	8,245,590	—	—	2,767,300	—	41,700	34,300
1922	18,099,530	6,537,900	1,780,000	2,000	1,719,800	15,100	89,500	27,400
1923	19,199,400	7,090,000	3,080,300	—	1,707,500	2,100	117,500	32,300
1924	22,007,100	7,614,800	2,212,600	—	1,614,200	—	85,100	31,200
1925	24,870,600	7,813,700	2,075,900	—	1,723,100	—	114,800	36,800
1926	25,379,100	8,277,200	2,638,800	—	2,257,900	—	239,100	52,100
1927	23,118,600	7,261,100	1,405,900	—	1,749,000	—	127,700	38,900
1928	39,274,700	9,171,400	3,680,400	—	3,244,000	—	172,900	48,100
1929	37,916,100	9,645,400	6,764,400	—	4,458,600	100	215,100	52,400

SHANGHAI DISTRICT

1919	28,230,029	9,185,400	—	—	33,774,200	—	126,500	60,700
1920	34,349,504	9,022,100	—	—	38,695,900	—	178,300	80,900
1921	39,428,464	10,662,200	—	—	45,426,700	—	869,400	107,400
1922	26,735,800	3,746,000	6,474,100	24,192,500	9,825,700	198,200	669,900	97,100
1923	35,755,108	6,791,600	5,871,300	29,693,500	17,400,900	342,100	98,400	178,500

1924	.....	35,352,732	6,625,400	5,655,100	42,484,600	19,521,800	2,080,700	233,600	252,800
1925	.....	36,448,563	7,733,300	11,612,300	44,029,500	16,599,400	1,625,600	239,200	279,700
1926	.....	40,883,900	8,220,100	23,610,100	44,618,100	16,055,000	559,600	259,700	344,800
1927	.....	42,309,300	7,615,800	26,947,900	32,774,100	15,457,600	957,700	146,700	161,900
1928	.....	46,644,400	7,910,500	28,949,600	36,498,900	20,490,100	1,295,300	162,500	202,900
1929	.....	52,459,200	7,886,900	35,242,400	42,629,600	25,306,400	3,360,700	198,100	362,100

PARCLES

Parcels are divided into ordinary and special, the latter including insured and C.O.D. parcels. The following table shows the parcels distributed in Kiangsu and Shanghai district, quantity being shown in kilo grams and value in dollars:

Kiangsu District

	ORDINARY			INSURED			SPECIAL		
	Pieces	Value	Quantity	Pieces	Value	Quantity	Pieces	C. O. D. Value	Quantity
1919	289,000	6,160,000	802,800	50,400	3,632,800	397,600	200	200	200
1920	359,800	6,562,335	1,004,728	59,800	4,433,044	611,695	——	——	——
1921	300,800	4,430,900	1,162,400	54,790	3,871,000	380,000	135	700	320
1922	282,100	6,470,600	1,027,100	41,000	3,541,700	277,700	46	860	80

1923	284,500	6,611,300	1,103,300	43,000	3,857,000	325,600	200	1,800	400
1924	317,900	9,187,300	1,413,800	32,700	2,718,300	246,200	200	2,100	200
1925	323,600	9,160,400	1,394,200	31,800	2,821,500	245,200	200	1,700	300
1926	357,500	9,414,200	1,487,300	34,300	2,876,100	266,700	200	4,300	700
1927	204,300	4,803,700	986,400	21,500	1,811,800	153,700	100	8,000	100
1928	339,700	7,812,000	1,914,500	22,200	1,403,300	183,200	200	4,200	1,100
1929	324,100	6,463,900	1,827,000	19,200	1,520,000	145,500	500	7,700	2,700
				Shanghai District					
1919	479,900	8,314,646	3,112,300	52,700	3,533,398	322,700	11,100	116,532	24,000
1920	637,000	13,325,686	3,849,800	63,700	3,581,529	481,000	15,800	178,111	38,400
1921	594,900	15,115,943	3,397,000	41,400	3,584,188	294,000	17,100	295,197	6,000
1922	603,700	18,331,817	3,793,600	48,100	2,406,524	273,100	18,900	256,047	56,400
1923	783,600	57,779,256	3,878,500	46,100	2,934,033	322,400	21,700	288,734	74,800
1924	860,600	39,491,563	4,615,100	43,400	2,780,343	268,300	30,600	448,053	113,000
1925	1,145,200	40,213,131	7,407,200	40,500	2,764,412	264,100	29,400	431,894	102,700
1926	1,201,800	49,192,017	7,762,200	33,600	2,787,387	245,100	34,400	554,613	132,500
1927	1,066,500	42,413,238	7,404,800	21,400	1,993,658	136,200	25,600	460,129	120,400
1928	1,503,900	45,567,891	11,419,500	17,300	1,764,727	108,800	32,600	511,522	148,300
1929	1,604,200	34,194,900	11,603,700	20,100	1,553,900	127,600	39,100	603,600	177,800

DOMESTIC REMITTANCES

Domestic remittance business in the postal service began about 1919, when 75 money-order issuing offices and 24 cashing offices were established. In 1928 the number of issuing offices had increased to 147, while that of cashing offices increased to 145. In 1919 the issuing offices in Shanghai district numbered 47 and cashing offices, 14, but in 1928 the former increased to 70 and the latter to 61. The following table shows the transactions handled in Shanghai and Kiangsu districts for the 11 years ending 1929:

Kiangsu District

	Money Order Issued		Money Order Cashed	
	Amount	Orders	Amount	Orders
1919	$3,866,100	263,600	$4,846,400	326,000
1920	5,374,000	323,600	6,205,000	386,800
1921	5,707,800	364,100	6,531.800	406,200
1922	6,944,700	387,800	8,071,600	473,500
1923	8,279,200	443,400	9,677,500	540,400
1924	9,495,300	474,600	10,666,900	574,100
1925	9,624,600	466,300	10,610,600	569,000
1926	10,467,200	507,500	12,432,300	634,400
1927	8,513,600	335,700	9,078,200	427,200
1928	12,864,200	495,300	13,077,200	577,700
1929	16,490,695	641,467	17,067,131	737,999

Shanghai

	Money Order Issued		Money Order Cashed	
	Amount	Orders	Amount	Orders
1919	$1,920,900	133,800	$3,029,100	178,100
1920	2,855,100	183,500	4,064,700	217,800
1921	3,388,500	213,100	4,449,500	234,800
1922	3,941,400	243,700	4,765,800	265,300
1923	4,947,100	292,300	6,072,600	328,100
1924	5,907,700	331,300	7,408,400	357,000
1925	6,914,000	360,400	7,896,500	343,800
1926	7,682,000	384,300	8,073,600	358,300
1927	7,016,500	310,200	6,979,700	240,000
1928	8,926,300	396,500	8,271,500	328,400
1929	10,577,634	472,878	10,417,626	405,260

STAMP SALES

Stamp sales in Kiangsu and Shanghai districts for the 18 years ending 1929 are shown in the following table:—

	Kiangsu	Shanghai
1912	$245,642.52	$266,472.04
1913	334,463.22	387,914.41
1914	377,954.42	453,007.95
1915	456,382.67	512,690.34
1916	537,437.04	588,944.15
1917	635,028.42	695,683.71
1918	703,230.17	780,863.52
1919	837,471.55	890,929.35
1920	932,490.33	1,146,582.21
1921	1,039,430.12	1,341,641.74
1922	1,087,280.73	1,505,831.95
1923	1,156,341.49	2,277,259.43
1924	1,209,513.74	2,411,991.17
1925	1,301,832.71	2,695,647.74
1926	1,509,741.80	3,270,348.64
1927	1,386,262.83	3,293,623.54
1928	1,855,611.39	4,224,114.07
1929	2,011,813.04	4,849,173.70

SAVINGS BANKS

In 1918 the Ministry of Communications appointed a committee to investigate the question of postal savings, and on January 24, 1918 the Government published the Postal Savings Regulations. The actual establishment of savings departments in post-offices dates to July 1, 1919, and the following table shows the distribution of postal savings banks in Kiangsu and Shanghai districts:

	Kiangsu	Shanghai
1919	8	2
1920	19	9
1921	21	9
1922	21	9
1923	22	13
1924	26	14
1925	27	14
1926	27	17
1927	25	17
1928	19	15
1929	19	15

The following table shows the total deposit in savings banks in Kiangsu district, value being expressed in thousands of dollars:

	Deposits
1919	$ 9,096.36
1919	53,644.04
1921	117,197.83
1922	187,474.35
1923	289,795.61
1924	413,231.15
1925	566,711.63
1926	701,688.45
1927	595,675.11
1928	602,104.52
1929	814,955.89

The following table shows the total deposit in Shanghai district postal savings banks:—

	Deposits
1919	$ 9,231.02
1920	55,682.14
1921	109,009.34
1922	166,843.01
1923	235,535.84
1924	343,341.43
1925	570,062.17
1926	726,241.20
1927	739,380.66
1928	828,870.42
1929	1,003,991.55

STAFF AND EXPENDITURE

According to official reports in 1929 there were 660 postal employees and 1,049 other workers in Kiangsu post offices, while the income during the same year amounted $2,154,515.31, with expenditure amounting to $1,263,530.38. In Shanghai the same year there were 3,055 postal employees, of whom 1,324 were staff members and 1,731 other workers. The revenue of Shanghai post-offices during 1929 was $5,357,198.86 while expenditure amounted to $2,878,304.95.

EMPLOYEES

Postal employees include regular staff and other workers, the former including Post Commissioner, Deputy Commissioner, postal officials, assistant officials, clerks and *yu wu yuan* (郵務員), while in the latter category messengers and miscellaneous workers are included. The following table shows members of the staff and other workers in Kiangsu district:

Staff

	Commissioners	Deputy Commissioners	Yu Wu Kuan	Yu Wu Tso	Clerks	Yu Wu Yuan	Yu Wu Sheng	Letter Sorters	Total
1919	1	0	9	0	0	91	154	159	1,156
1920	1	0	9	0	0	88	179	192	1,279
1921	1	1	10	0	1	78	165	239	1,361
1922	1	0	9	0	1	73	166	221	471
1923	1	1	7	1	1	61	189	211	472
1924	1	1	5	1	1	61	200	216	486
1925	1	1	7	0	2	62	232	216	521
1926	1	1	8	0	1	67	251	269	598
1927	1	3	3	0	1	61	252	268	589
1928	1	2	0	273	1	321	0	0	598
1929	1	1	0	347	1	310	0	0	660

Other Workers

	Postmen	Couriers	Others	Total
1919	390	161	191	742
1920	426	172	212	810
1921	454	176	236	866
1922	458	175	236	869
1923	487	174	219	880
1924	494	175	218	887
1925	497	175	221	893
1926	581	173	247	1,001
1927	582	164	259	1,005
1928	577	147	263	987
1929	604	151	294	1,049

The following table shows the staff and other workers in Shanghai District:

Staff

	Commissioners	Deputy Commissioners	Yu Wu Kuan	Yu Wu Teo	Clerks	Yu Wu Yuan	Yu Wu Sheng	Letter Sorters	Total
1919	1	1	8	2	1	135	130	168	446
1920	1	2	5	2	1	153	135	183	482
1921	1	2	6	1	2	156	139	181	488
1922	1	2	11	1	1	148	204	154	522
1923	2	3	15	1	4	219	374	138	756
1924	1	3	13	1	4	322	488	179	1,011
1925	1	3	18	1	6	330	567	229	1,155
1926	1	3	22	2	6	305	645	260	1,244
1927	1	1	19	2	5	312	630	270	1,240
1928	2	1	0	317	5	957	0	0	1,282
1929	2	2	0	431	5	884	0	0	1,324

Other Workers

	Postmen	Couriers	Others	Total
1919	522	6	257	785
1920	552	5	270	827
1921	574	5	287	866
1922	565	4	296	865
1923	585	3	415	1,003
1924	630	3	608	1,241
1925	822	3	748	1,573
1926	883	3	805	1,691
1927	882	3	811	1,696
1928	888	3	852	1,743
1929	895	3	833	1,731

REVENUE AND EXPENDITURE

Post office revenue may be derived from 6 sources—stamp sales, money order issues, publications, through-traffic charges from foreign countries, miscellaneous items, and special items. Their expenditure is divided into current expenses and capital investment, the former including wages, while in the latter the cost of buildings and cars is included. The following tables shows the postal revenue and expenditure of Kiangsu and Shanghai districts; the unit being in dollars:—

Revenue: Kiangsu District

	Stamp Sales	Registration Fees	Sales of Publications	Miscellaneous	Special	Total
1919	828,223.53	2.69	133.57	5,686.54	—	844,046.33
1920	934,225.33	44.85	119.95	6,601.32	—	940,991.45
1921	1,052,682.57	161.05	129.59	9,016.10	—	1,061,989.31
1922	1,092,202.08	177.03	468.80	7,162.84	—	1,100,010.83
1923	1,164,559.65	365.17	227.04	9,514.73	—	1,174,666.59
1924	1,243,674.32	236.83	199.06	6,742.86	—	1,250,853.05
1925	1,304,102.30	427.75	135.75	8,876.84	—	1,313,542.64
1926	1,512,052.95	1,490.26	472.06	8,628.04	—	1,522,643.31
1927	1,387,870.25	1,885.65	455.09	9,990.15	—	1,400,205.14
1928	1,858,623.92	7,290.92	461.83	11,321.98	—	1,877,698.65
1929	2,113,638.84	20,399.94	353.37	20,123.16	—	2,154,515.30

Revenue: Shanghai District

	Stamp Sales	Registration Fees	Sales of Publications	Miscellaneous	Special	Total
1919	894,616.66	57,658.69	883.75	6,940.38	—	960,909.48
1920	1,151,141.39	67,697.63	719.45	8,989.94	—	1,228,518.41
1921	1,373,097.45	96,156.41	579.76	131,347.03	—	1,601,180.65
1922	1,513,132.11	124,607.51	1,301.26	28,286.12	18,736.53	1,686,063.53
1923	2,305,402.14	134,268.18	1,412.77	32,085.34	19,275.13	2,492,443.56
1924	2,424,110.40	172,048.17	1,303.26	40,443.76	3,579.00	2,641,484.59
1925	2,709,554.52	191,532.73	1,077.81	69,407.46	—	2,971,572.52
1926	3,289,000.68	322,762.17	2,203.37	165,654.01	—	3,679,620.23
1927	3,317,196.19	169,635.48	2,123.67	72,413.79	—	3,561,369.13
1928	4,249,873.79	238,402.08	2,256.25	61,721.42	—	4,552,253.54
1929	5,073,702.61	224,662.81	2,092.74	56,440.70	—	5,357,198.86

Current Expenses: Kiangsu District

	Salaries and Wages	Allowances	Office Expenses	Freight	Compensation	Special	Total
1919	309,922.68	13,516.45	65,935.02	17,612.74	1,494.00	——	408,480.89
1920	363,963.53	30,536.57	75,158.17	18,081.51	455.97	——	488,195.75
1921	398,491.67	25,870,36	76.537.53	21,462.61	1,320.69	——	533,682.66
1922	422,581.52	43,733.59	86,818.37	19,597.52	1,766.04	——	574,497.04
1923	461,718.23	46,817.95	80,803.55	23,347.63	1,777.46	——	614,465.02
1924	485,983.50	46,322.64	63,007.60	26,035.31	1,670.59	——	633,019.64
1925	553,701.41	43,667.31	71,625.87	30,044.82	520.36	——	699,859.77
1926	674,162.50	69,340.12	95,519.96	38,055.14	7,750.37	——	884,837.09
1927	716,883.88	183,932.45	68.917.01	42,182.66	7,307.35	——	1,029,223.35
1928	761,988.69	161,341,96	78,225.36	44,517.55	2,287.22	——	1,048,360.78
1929	885,965.81	218,486.19	86,800.20	71,072.94	1,205.24	——	1,263,530.38

Current Expenses: Shanghai District

1919	397,007.17	27,724.15	130,549.98	35,780.53	1,375.92	——	592,437.75
1920	356,818.13	27,020.08	155,435.02	25,392.68	461.65	——	665,127.56
1921	504,454.38	32,275.96	174.895.72	40,521.93	9307.6	——	750,078.75
1922	581,464.30	34,238.80	199,554.15	39,629.66	2,077.55	——	856,964.46
1923	813,337.00	37,533.97	341,052.40	41,780.30	2,635.82	——	1,236,339.49
1924	1,002,924.72	54,480.00	379,503.13	95,620.02	1,839.71	——	1,534,367.58
1925	1,242,056.68	126,300.70	304,026.53	113,281.66	3,233.85	——	1,787,899.42
1926	1,589,187.58	279,868.85	379,465.40	108,784.57	3,304.81	——	2,360,611.21
1927	1,728,671.19	413,297.63	291,506.32	120,191.93	3,163.45	——	2,556,830.52
1928	1,805,610.23	380,136.21	342,347.79	138,944.67	1,266.97	——	2,668,345.87
1929	1,968,727.60	398,741.29	349,774.19	158,888.45	4,173.42	——	1,263,530.38

, CAPITAL INVESTMENT: KIANGSU DISTRICT

	Building	Instrument	Boats	Cars	Miscellaneous	Total
	$	$	$	$	$	$
1919	94,087.30	12,153.48	——	2,524.08	——	108,764.86
1920	90,953.68	12,934.98	100.00	44.00	447.60	104,480.26
1921	26,964.43	11,486.46	——	1,339.24	10.50	139,800.63
1922	104,752.30	3,598.60	——	5,347.09	32.50	113,730.49
1923	36,239.63	10,865.17	——	269.00	970.22	48,344.02
1924	34,449.07	2,434.26	42.00	144.95	80.00	37,150.28
1925	1,378.90	2,839.29	——	389.36	976.51	5,584.06
1926	——	2,554.81	——	491.61	1,303.05	4,349.47
1927	——	882.40	——	5,009.31	1,723.53	7,615.24
1928	——	564.15	162.00	2,058.87	399.94	2,860.96
1929	——	1.529.84	——	2,746.86	899.07	5,175.77

CAPITAL INVESTMENT: SHANGHAI DISTRICT

	$	$	$	$	$	$
1919	11,445.24	3,043.59	59,582.61	4,366.64	1,332.73	79,770.81
1920	266,873.66	1,481.82	——	646.32	2,043.75	271,045.55
1921	——	10,456.60	——	15,462.24	959.09	26,877.93
1922	428,949.77	5,772.05	——	1,302.98	161.55	436,186.35
1923	939,894.50	16,365.57	——	346.23	4,499.18	961,105.48
1924	1,061,109.15	39,660.64	——	6,488.54	3,816.07	1,111,074.40
1925	5,753.56	70,328.67	60.00	40,393.01	5,668.19	122,203.43
1926	189,279.90	5,646.71	1,216.62	7,199.58	3,606.97	206,949.78
1927	11,031.87	3,565.56	——	9,237.33	2,853.75	26,688.51
1928	278,942.09	3,989.75	——	609.63	3,751.93	287,293.40
1929	4,400.00	2,453.13	——	5,369.97	1,808.87	14,031.67

CHAPTER V

TELEGRAPH, RADIO AND TELEPHONE SERVICES

TELEGRAPH and radio services as well as long-distance telephones in Kiangsu Province are operated by the Ministry of Communications, while local telephone services are either operated by the Ministry or by private companies. The following is a brief description of the various services operating:—

TELEGRAPHS

According to 1929 returns, in Kiangsu Province there were 84 telegraph offices, employing 2,033 assistants. The total length of wire was 3,764.53 with 217 telegraph machines. The volume of domestic telegraph business amounted to 27,924,923 words while the number of telegrams transmitted was 690,242. The revenue amounted to $2,914,252.46, while current expenses were $1,176,912.22.

In Kiangsu Province there is one telegraph administration office, one special telegraphic office, two first-class, three second-class, six third-class, and 19 fourth-class offices and 52 branch offices, making a total of 84.

Telegraphic offices are classified according to their revenue. For instance a first-class office is one whose income is over $5,000 per month, a second-class office has an income between $2,500 and $5,000, a third-class between $1,000 and $2,500, fourth-class between $500 and $1,000, and a branch office, below $500 per month.

Employees include director, department heads, technical experts, clerks, and messengers. According to 1929 returns there were 2,033 employees in Kiangsu telegraph offices, including 84 directors, 26 technical experts, 47 first-class clerks, 124 second-class clerks, 831 third-class clerks, and 425 messengers.

Telegrams are divided into Government, urgent, ordinary, and Press messages, with another reserved for famine-relief affairs. The following table shows the volume of telegraph business in Kiangsu Province during 1929:

	GOVERNMENT		URGENT			ORDINARY			PRESS	FAMINE AFFAIRS	
	Chinese	Foreign	Chinese	Coded	Foreign	Chinese	Coded	Foreign	Chinese	Foreign	Chinese	Foreign
Jan.	227,628	31,823	17,915	196	10,384	788,275	6,273	115,449	1,558,146	8,343	16,129	49
Feb.	177,921	19,402	17,313	156	7,147	634,994	7,504	96,908	550,422	6,271	19,283	241
March	414,076	53,609	16,343	392	9,133	705,694	7,778	119,117	570,073	7,101	49,572	238
April	442,304	39,942	13,741	358	18,036	648,919	6,398	120,492	530,217	9,982	43,195	286
May	406,976	23,488	14,314	234	13,022	648,555	6,017	117,306	672,592	10,168	30,478	641
June	410,414	45,675	10,891	117	8,956	604,644	6,512	94,925	714,932	8,502	12,494	319
July	312,663	34,956	14,842	73	10,142	691,018	5,752	118,256	1,573,330	14,789	21,948	64
Aug.	2,288,016	23,656	13,613	56	10,642	694,840	7,204	115,707	489,501	12,829	22,025	—
Sept.	2,026,275	40,267	15,260	166	23,357	746,292	15,323	110,014	302,506	8,233	27,584	143
Oct.	464,796	39,344	15,772	257	16,728	732,724	5,717	112,102	574,199	10,532	32,532	86
Nov.	485,407	11,928	18,032	456	8,661	640,049	7,452	107,943	688,512	8,651	11,512	101
Dec.	456,491	61,688	20,784	733	12,172	740,431	15,406	109,805	692,683	9,157	12,948	293
Total	8,112,967	425,788	188,823	3,194	148,416	8,276,635	97,336	1,338,024	8,917,113	114,566	299,700	2,361

TELEGRAPHS (1929): SHANGHAI

	GOVERNMENT		URGENT			ORDINARY			PRESS FAMINE AFFAIRS			
	Chinese	Foreign	Chinese	Coded	Foreign	Chinese	Coded	Foregin	Chinese	Foreign	Chinese	Foreign
Jan	3,256	622	817	5	1,145	40,407	312	9,603	3,844	331	237	1
Feb.	2,510	340	818	8	834	30,172	431	7,700	1,454	288	261	7
March	4,755	768	745	12	1,044	37,136	529	9,837	1,803	304	655	7
April	4,713	585	645	8	1,171	34,615	512	10,143	1,566	357	607	6
May	4,449	348	732	6	1,166	34,479	384	10,594	2,143	357	409	20
June	4,536	1,721	570	4	1,118	33,009	395	9,305	1,937	326	185	12
July	3,468	478	729	3	1,209	35,574	318	10,637	3,963	425	317	2
Aug.	11,697	389	689	5	1,152	35,908	411	10,823	1,607	437	310	0
Sept.	11,334	537	714	12	1,813	37,909	566	10,726	2,041	332	365	6
Oct.	4,915	567	823	13	1,188	39,450	484	11,279	1,702	393	459	2
Nov.	4,463	220	883	25	1,048	34,913	415	10,567	2,026	261	156	3
Dec.	4,673	796	939	16	1,123	39,750	578	10,606	1,769	292	197	11
Total	64,869	7,371	9,104	117	14,011	433,322	5,335	121,820	25,855	4,203	4,158	77

According to reports made in 1932 by the Ministry of Communications, the revenue derived from telegraphs in 1929 amounted to $2,914,253.26 while the cost of administration and capital investment were $1,176,912.22 and $4,557.15 respectively.

Revenue received from the telegraph service may be broadly divided into two classes, principal and auxiliary, the former including domestic and foreign telegraphs while the latter includes registration fees, licence fees, copying fees, and other charges. In 1929 the revenue derived from domestic telegraphs was as follows: Political, $879,483.22; military, $398,004.01; commercial, $1,239,147.97; Press, $215,517.52; relief matters, $35,340.28; reply fees, $34,754.40; inquiry fees, $155.50, and transfers, $18,907.49, while from foreign telegraphs the total amounted to $43,386.42, consisting of $42,121.48 for telegraphs and $1,264.94 for transfers. Revenues derived from auxiliary sources are: registration, $36,044.00; licences, $4.80; copying, $9,247.80; proof-reading, $158.78; miscellaneous, $3,900.27, making a total of $49,355.65.

Expenses include current and capital investment. In 1929 the former were as follows: staff members, $188,345.56; clerks, $658,145.52; technical experts, $17,060.60; messengers, $53,028.06; office expenses, $171,962.79; purchases, $3,598.84; repairs, $2,050.02; pensions, $45,337.98 and miscellaneous expenses, $37,382.85, while for capital investment the amount was $4,557.15, consisting of $3,799.75 for poles and $757.40 for transportation.

RADIO

According to the 1931 report by the Ministry of Communications, wireless stations are established at Shanghai, Woosung, Tsungming, Nanking, Amoy, Foochow, Anking, Wuhu, Tinghai, Ningpo, Hangchow, Hankow, Wuchang, Ichang, Nanchang, Changsha, Shashih, Peiping, Tientsin, Tsinan, Tsingtao, Chefoo, Canton, Swatow,

Chengtu, Chungking, Wanhsien, and Tihua. The stations in Kiangsu Province are Shanghai, Woosung, Tsungming, and Nanking. Since the Sino-Japanese trouble at Shanghai in 1932 the wireless station at Woosung has been removed to Rue Ghisi, (楓林橋), with a receiving-office in Sassoon Building, Nanking Road.

The first wireless station in Kiangsu Province was at Woosung Forts, established in 1913 for the convenience of shipping.

SHANGHAI STATIONS

Wireless stations in Shanghai are the Shanghai International Wireless Station (上海國際电台) and Shanghai Station, the former with central office in Sassoon Building and branch office at 15 Avenue Edward VII., offering direct communication with San Francisco, Berlin, Geneva, Paris, Saigon, Hongkong and Batavia.

The Shanghai Wireless station located at 565 Min Kuo Road (民國路) has three offices, one at 7½ the Bund, one at the Shanghai Commercial and Savings Bank, North Szechuen Road Branch, and the third at the Shanghai Commercial and Savings Bank, East Gate Branch. Receivers coming under this administration are classed in numbers, each having a separate duty, No. 1 receiving messages from Amoy, No. 2 from Swatow and Loyang, No. 3 from Hankow, No. 4 from Ichang, Changsha, and Shashih, No. 5 from Nanchang and Peiping, No. 6 from Wuhu, Chengchow, and Kuiyang, No. 8 from Nanking, No. 9 from Harbin, No. 10 from Canton, No. 11 from Foochow, No. 12 from Tsingtao, No. 13 from Chungking, No. 14 from Tientsin, No. 15 from Yunnan, No. 16 from Chefoo, and No. 17 from Hangchow, Ningpo, Tinghai, and Tsungming.

Transmitters of the Shanghai Wireless station are 17 in number, details being shown in the following table:

			Power	Wave Length (Meters) Day	Night	Communications	Date of Operation
No.	1	XHF	500	37	37	Tsingtao, Yunnan, Amoy	Aug. 1928
	2	XHG	100	31	60 77	Nanking, Swatow	Jan. 1929
	3	XHI	500	32	64	Hankow	Jan. 1929
	4	XHJ	100	40	68 85	Nanking, Tsungming	Jan. 1929
	5	XHK	100	33	64 40	Tientsin	April 1929
	6	XHL	500	25.31	55 60	Canton	June 1929
	7	XHM	250	64	75 90	Tinghai, Hangchow Ningpo	July 1929
	8	XHN	100	28	56 70	Amoy	Feb. 1930
	9	XHO	100	38	76 82	Anking, Wuhu, Chefoo	Sept. 1929
	10	XHP	250	40	40	Foochow	Feb. 1928
	11	XHQ	250	25	48 72	——	Jan. 1929
	12	XHR	500	25.32	41 51	Chengtu, Chungking	June 1929
	13	XHS	100	29	58 65 76	——	Sept. 1928
	14	XHT	100	30	60 88	Nanchang, Peiping Tsinan	July 1930
	15	XHU	500	38	75	Tientsin	
	16	XHV	100	30	60 77	Yunnan	
	17	XHW	500	30	60 66	Swatow, Canton	

TSUNGMING

In Tsungming there are two stations, one being known as the Tsungming Wireless Station and the other as Tsungpao (崇堡) Station. The Tsungming Station, XHY, was put into operation in October, 1928, the wave-length in daytime being 61 meters, while at night the wave used is 70 meters, carrying communications between Tsungming and Shanghai and Tsungpao.

The Tsungpao station, XHZ, started operation in October, 1929. Details of these two stations are shown in the following table:

		Watts	Wave Length (Meters) Day	Night	Direct Communication	Date of Operation
Tsungming	XHY	15	61	70	Shanghai, Tsungpao	July 1928
Tsungpao	XHZ	15	58	76	Tsungming, Shnghai	Oct. 1929

NANKING

There are four wireless stations in Nanking, XHA, XHB, XHC, and XHD, particulars being shown in the following table:

		Watts	Wave Length (Meters) Day	Night	Direct Communication	Date of Operation
Nanking	XHA	100	41	66	Shanghai, Foochow, Changsha, Canton	March 1928
	XHB	250	38	61	Hankow, Peiping,	
			28		Tsingtao	March 1929
	XHC	100	44	70	Shanghai	April 1929
	XHD	100	—	66	Anking, Wuhu Nanchang, Ichang	July 1928

STAFF AND ORGANIZATION

Employees in the Wireless Station (central) are classified as engineer-in-chief, engineers, technical experts, department heads, clerks, telegraphists, mechanics, foremen, messangers, and others, their number in 1933 being as follows: Engineer-in-chief, 1; engineers, 3; department heads, 2; technical experts, 3; clerks, 87; telegraphists, 115; mechanics, 16; foremen, 28; messangers, 45, and others, 43, making a total of 343.

In 1931 the employess in the Shanghai International Wireless Station were as follows: clerks, 37; telegraphists, 67; general workers, 82; foremen, 30; messangers, 68, making a total of 284.

TRAFFIC CONDITIONS

Statistics as to the revenue and expenditure of the Shanghai International wireless station are not available, but in 1931 the monthly upkeep of the station amounted to over $20,000. The following table shows the volume of traffic (in percentage) handled at the Shanghai International Wireless Station during 1931:

INTERNATIONAL WIRLESS STATION: 1931

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Messages.												
San Fransico:												
From	4.22	4.55	4.37	3.64	3.88	3.25	3.78	4.14	5.45	6.00	5.66	5.91
To	2.32	2.04	2.68	2.67	3.00	3.24	3.48	3.50	4.51	5.50	5.15	6.35
Berlin:												
From	2.13	2.02	3.02	2.88	2.97	3.35	3.72	3.40	5.10	5.05	4.85	4.40
To	2.52	2.80	3.60	2.63	2.80	3.96	4.78	4.80	6.60	7.80	6.82	7.01
Paris:												
From	0.00	0.00	1.98	1.95	2.16	4.08	5.48	5.85	6.70	6.95	7.04	7.30
To	0.00	0.00	0.54	1.88	2.12	4.24	5.51	5.80	6.95	8.64	7.52	7.30
Manila:												
From	4.31	5.12	5.08	4.96	5.18	3.53	3.73	3.67	3.88	3.96	3.46	3.92
To	3.68	3.82	4.68	4.52	5.39	3.33	3.85	3.55	3.92	4.21	4.15	4.10
Hongkong:												
From	3.99	3.79	3.91	3.59	3.68	3.87	4.06	3.40	3.74	4.91	4.04	4.02
To	4.46	4.69	5.20	4.41	4.42	4.40	4.05	3.49	4.07	4.27	4.71	4.83

Java:												
From	4.07	3.80	4.51	3.78	4.58	4.50	4.98	5.10	5.55	6.60	5.65	4.77
To	1.85	2.71	2.34	2.48	3.12	3.45	3.70	3.94	4.36	5.10	4.43	4.63
Average:												
From	3.62	3.67	4.01	3.57	3.82	3.72	4.12	3.97	4.72	5.52	4.84	5.05
To	3.50	3.22	3.72	3.42	3.72	3.83	4.03	3.85	4.66	5.32	5.12	5.43
Words.												
San Francisco:												
Received	3.54	3.64	3.41	2.92	3.08	2.71	3.16	3.66	4.92	5.42	5.23	6.23
Sent	2.64	2.05	2.38	2.50	3.40	3.10	4.22	3.68	7.03	6.06	7.94	6.99
Berlin:												
Received	1.95	1.74	2.74	2.56	2.90	2.90	3.21	2.98	5.07	7.99	4.58	4.14
Sent	2.24	2.67	4.17	2.33	2.72	3.35	4.29	4.20	6.95	9.43	8.45	0.44
Paris:												
Received	0.00	0.00	1.68	1.74	2.02	3.62	4.59	5.00	7.14	7.34	13.48	9.52
Sent	0.00	0.00	0.57	1.61	1.64	3.08	3.98	4.40	6.62	6.76	8.93	6.68
Manila:												
Received	6.44	5.45	6.66	4.94	4.16	3.89	4.49	4.28	4.94	5.94	3.88	4.23
Sent	3.39	2.91	3.45	3.04	3.14	2.72	3.18	3.39	3.92	3.94	3.65	3.99
Hongkong:												
Received	3.65	3.28	3.33	3.14	3.90	3.80	4.00	3.52	3.82	5.50	4.00	4.12
Sent	3.72	4.14	1.73	3.78	3.96	3.94	4.43	5.98	6.28	4.27	4.38	4.88
Java:												
Received	4.35	3.95	4.68	3.72	4.79	4.37	4.93	5.00	6.32	7.74	5.90	4.84
Sent	1.80	2.56	2.15	2.13	2.76	2.96	3.22	3.74	4.33	5.11	3.90	4.75

Total:												
Received	3.61	3.34	3.74	3.20	3.50	3.40	3.83	3.84	4.90	6.10	5.29	5.30
Sent	2.75	2.72	3.07	3.83	3.27	3.30	4.05	4.41	6.11	5.57	6.15	5.72
Revenue in Dollars												
San Fransico:												
From	3.75	4.50	4.03	3,08	3.36	3.19	3.18	3.64	5.45	6.49	5.73	6.50
To	2.30	2.35	2.92	2.72	3.32	3.54	3.69	3.48	5.31	5.93	5.95	5.58
Berlin:												
From	1.14	1.25	2.10	1.76	2.07	2.43	2.31	2.00	3.43	5.14	2.84	2.62
To	2.74	4.09	6.16	3.32	3.28	4.92	5.92	5.41	8.48	2.00	8.64	6.95
Paris:												
From	0.00	0.00	1.20	1.12	1.27	2.32	3.32	3.64	5.03	5.57	11.50	6.80
To	0.00	0.00	0.69	2.12	2.42	5.16	5.67	5.39	8.59	9.21	10.46	7.62
Manila:												
From	4.38	6.02	6.69	5.04	4.64	3.73	3.80	3.57	4.65	5.16	3.59	3.80
To	2.76	3.68	4.35	3.69	4.17	3.38	3.70	3.41	3.97	4.14	3.74	3.94
Hongkong:												
From	3.57	3.53	3.11	2.79	3.44	4.41	4.12	3.37	4.10	4.63	4.32	4.39
To	3.80	4.26	4.26	3.56	3.53	4.80	4.23	4.22	5.16	5.73	5.06	5.61
Java:												
From	3.10	3.61	4.41	3.18	4.05	4.13	4.54	4.55	5.90	7.44	5.48	4.29
To	1.87	2.80	2.66	2.46	3.20	3.72	3.92	4.40	5.02	6.11	4.54	4.52
Average:												
From	2.55	3.25	3.36	2.62	2.93	3.09	3.22	3.39	4.93	6.02	5.83	5.35
To	2.10	2.54	3.33	2.81	3.22	4.12	4.47	4.41	6.31	7.31	8.86	5.98

The following table shows the monthly business of the Shanghai International Wireless Station, figures being shown in percentages:—

	Jan.	Feb	March	April	May	June	July	Aug.	Sept-	Oct.	Nov.	Dec.	One Year
Messages.													
San Fransico:													
From	14.88	15.57	13.31	12.81	12.09	10.15	10.91	12.45	13.70	13.04	13.41	15.51	13.15
To	8.18	8.99	8.19	8.93	9.35	10.10	10.06	10.54	11.31	11.93	11.94	13.80	10.39
Berlin:													
From	3.35	8.08	4.11	4.30	4.13	4.64	4.79	4.56	5.70	5.85	5.11	4.41	4.50
To	3.97	4.26	4.89	3.93	3.90	5.50	6.14	6.44	7.39	7.55	7.18	7.03	5.88
Paris:													
From	0.00	0.00	1.79	1.95	2.00	3.78	4.59	5.22	4.99	4.48	4.95	4.87	3.46
To	0.00	0.00	0.49	1.87	1.96	3.92	4.72	5.17	5.17	5.57	5.30	4.37	3.52
Manila													
From	7.52	8.64	7.67	8.20	8.00	5.42	5.31	5.45	4.82	4.25	4.05	4.37	5.91
To	5.46	6.43	7.05	7.47	8.31	5.11	5.49	5.27	4.86	4.51	4.86	4.55	5.72
Hongkong:													
From	21.43	19.70	18.13	18.33	17.49	18.35	17.81	15.54	14.30	16.14	14.54	13.70	16.83
To	23.96	24.40	24.10	22.50	20.96	00.86	17.76	15.99	15.51	14.10	16.95	16.50	18.97
Java:													
From	7.06	6.32	6.77	6.24	7.02	6.90	7.07	7.55	6.85	7.04	6.57	5.28	6.70
To	3.22	4.58	3.50	4.08	4.79	5.27	5.25	5.82	5.40	5.44	5.24	5.11	4.87
Total:	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Words.													
San Fransico:													
Received	18.00	19.45	16.20	15.66	14.76	13.08	12.99	14.36	14.47	15.03	14.76	18.52	15.53
Sent	13.44	10.97	11.35	13.42	16.21	14.94	17.30	14.42	20.65	16.14	22.44	20.51	16.80
Berlin:													
Received	3.12	2.91	4.08	4.31	4.36	4.50	4.14	3.67	4.57	6.95	4.08	3.81	4.25
Sent	3.58	4.47	6.22	3.92	4.08	5.09	5.53	5.17	6.41	8.20	7.49	5.93	5.81
Paris:													
Received	0.00	0.00	1.86	2.18	2.25	4.07	4.40	4.57	4.90	4.75	8.89	6.51	4.24
Sent	0.00	0.00	0.63	2.02	1.83	3.47	3.81	4.04	4.27	4.37	5.88	4.57	3.31
Manila:													
Received ..	14.13	12.55	13.70	11.45	8.80	8.13	7.98	7.27	6.29	7.16	4.73	3.35	3.30
Sent	7.47	6.74	7.09	7.09	6.50	5.69	5.65	5.75	4.98	4.72	4.48	5.60	5.70
Hongkong:													
Received	16.42	15.45	13.99	14.87	16.48	16.19	14.50	12.18	9.92	13.50	9.99	10.67	13.17
Sent	16.72	19.54	17.49	17.92	16.70	16.79	16.08	20.74	16.32	10.44	10.98	12.67	15.42
Java:													
Received	5.04	4.80	5.06	4.55	5.22	4.80	4.61	4.48	4.22	4.88	3.98	3.23	4.45
Sent	2.08	3.12	2.33	2.81	3.01	3.25	3.01	3.25	2.90	3.22	2.52	3.17	2.91
Total:	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Revenue in Dollars													
San Fransico:													
From	36.74	36.82	28.05	26.34	25.48	20.62	19.21	21.72	22.53	22.66	21.03	26.68	24.62
To	22.53	19.22	20.36	23.24	25.09	22.82	22.31	20.80	22.00	20.65	21.83	22.95	21.92
Berlin:													
From	4.63	4.24	6.05	6.25	6.48	6.50	5.81	4.95	5.91	7.46	4.32	4.45	5.61
To	11.18	13.92	17.80	11.81	10.30	13.22	14.90	13.42	14.58	15.98	13.18	11.87	13.72
Paris:													
From	0.00	0.00	2.67	3.08	3.09	4.80	6.46	6.98	6.69	6.26	13.52	8.97	6.22
To	0.00	0.00	1.54	5.82	5.88	10.71	11.01	12.26	11.42	10.31	12.30	10.04	8.72
Manila:													
From	4.71	5.41	5.10	4.73	3.85	2.64	2.52	2.34	2.11	1.97	1.44	1.71	2.31
To	2.96	3.31	3.31	3.47	3.46	2.39	2.46	2.23	1.80	1.59	1.50	1.77	2.29
Hongkong:													
From	3.70	3.06	2.29	2.52	2.75	3.01	2.64	2.12	1.80	1.71	1.68	1.91	2.26
To	3.94	3.69	3.14	3.23	2.82	3.27	2.71	2.65	2.26	2.11	1.96	2.43	2.67
Java:													
From	6.00	5.82	6.04	5.36	6.04	5.26	5.41	5.35	4.81	5.11	3.96	3.47	5.01
To	3.61	4.51	3.65	4.15	4.76	4.76	4.66	5.17	4.09	4.20	3.28	3.74	4.15
Total:	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TELEGRAMS DESPATCHED AND RECEIVED DURING 1928

	Despatched		Received	
	No.	Words	No.	Words
Shanghai	43,247	836,960	42,893	822,129
Woosung	1,017	13,049	1,173	15,974
Tsungming	477	8,875	472	8,802
Nanking	7,865	338,578	10,460	479,446

TELEGRAMS DESPATCHED AND RECEIVED DURING 1929

	Despatched		Received	
	Words	No.	Words	No.
Shanghai Internation ...	364,916	17,625	533,528	26,468
Shanghai	336,841	12,280	347,130	12,613
Woosung	19,285	16,784	41,993	4,629
Tsungming	28,664	1,246	35,110	1,364
Nanking	——	——	——	——

REVENUE DURING 1929

	Revenue		Auxiliary Incomes		
	Political	Educational	Press	Licence	Others
Shanghai International	——	63,925.61	——	——	363.74
Shanghai	——	206,059.37	638.10	——	2,261.19
Woosung	——	9,675.98	——	——	23.00
Tsungming	81.25	1,438.98	——	——	27.19
Nanking	——	30,422,86	206.70	——	682.16

CURRENT EXPENDITURE DURING 1929

	Staff Wages	Technical Experts	Reporters	Clerks	Workers
Shanghai International	5,802.01	340.00	10,371.47	140.00	1,501.87
Shanghai	25,342.77	7,250.00	39,295.82	2,012.00	7,809.22
Woosung	2,306.00	860.00	10,125,98	607.00	1,208.00
Tsungming	600.00	630.00	1,742.00	168.00	335.50
Nanking	6,031.59	2,130.00	12,539.36	1,637.03	2,792.35

	Office Expenses	Purchases	Repairing	Pensions	Others
Shanghai International	7,129.66	1,495.71	1,156.67	——	——
Shanghai	15,958.79	7,881.30	847.54	547.00	363.03
Woosung	1,429.49	1,499.30	2,336.85	645.00	——
Tsungming	585.06	165.86	104.31	——	——
Nanking	7,153.00	1,921.78	3,938.27	185.00	40.79

CAPITAL INVESTMENT DURING 1929

	Machinery	Land	Building	Implements	Others
S'hai International	193,436.84	32,446.78	64,161.78	30,653.24	24,721.36
Shanghai	——	——	——	54.53	——
Woosung	——	——	——	——	——
Tsungming	——	——	——	——	——
Nanking	110.00	——	832.00	409.65	——

TELEPHONES

LONG-DISTANCE TELEPHONES

The long-distance telephone services in Kiangsu Province are the Shanghai-Nanking and the Kiang-Pei Lines, the former linking Shanghai, Woosung, Nanziang (南翔), Kunshan, Mutu (木瀆), Changshu, Wukiang, Kashing, Wusih, Wuchin, Nanking and Wuhu (蕪湖), while the latter links up Chinkiang, Siennumiao (仙女廟), Kiangtu, Kuachow (瓜洲), Shieryu (十二圩), Icheng, Shaopo (邵伯), Kaoyu, Kaishou (界首), Chishui (汜水), Paoying, Huaian, Tsingkiangpu (清江浦), Chunghsing (泰興), Suchien, Shuyang, Suining, Tungshan, Hsiaohsien, Huangkou (黃口), Tangshan, Fenghsien, Iling (宜陵), Tungkou (東溝), Founing, Tungkan (東坎), Iling (益林), Taihsien, Kowyen (口岸), Taihsing, Tangwan (塘灣), Kiangyen (姜堰), Chingtung (滾瀆), Huangchiao (黃橋), Chutang (曲塘), Haian (海安), Jukao, Tungchen (東陳), Tingyen (丁堰), Lingtsu (林梓), Peipu (白蒲), Shanshilipu (三十里埠), Tangchiacha (唐家閘), Nantung, Haimen, Chiulung (久隆), Fuan (富安), Anfeng (安豐), Liangtu (梁垛), Tunghai, Peichu (白駒), Liuchuang (劉莊), Yencheng, Shankang (上岡), and Wuyu (伍佑),

The length of the Shanghai-Nanking telephone is 544 kilometers and 30 meters. According to the 1931 report

made by the Ministry of Communications, calls during the year amounted to 107,160; revenue, $93,158.74; current expenses, $7,427.88; net profit, $85,730.86 and capital investment, $15,828.28, and in 1932 the figures were as follows: Calls, 131,409; revenue, $119,534.24; current expense, $8,853.32; profit, $110,860.92 and capital investment, $15,828.28.

The Kiang-Pei line has a length of 1,494 kilometers and 110 meters. According to the 1931 report of the Ministry of Communications, calls transmitted by this line during the year numbered 56,860; with revenue, $28,980.20; current expenses, $18,456.07; profit, $10,524.13; and capital investment, $1,126.22, and in 1932 the returns were:— calls, 109.936; revenue, $37,492.05; current expenses, $22,043.16; profit, $15,448.89 and capital investment, $1,126.22. The following table shows the calls transmitted by the Kiang-Pei line for the six years ending 1929:

	Calls transmitted by the Shanghai-Nanking	Calls transmitted by Kiang Pei Line
1924	——	31,700
1925	——	35.282
1926	40,940	44,915
1927	85,260	50,923
1928	107,160	56,860
1929	131,409	109,936

REVENE: SHANGHAI-NANKING LINE

	Telephone	Special Connection	Transfer
1928	93,158.74	——	——
1929	118,893.34	481.80	159.10

REVENUE: KIANG PEI LINE

	Telephone	Special Connection	Transfer
1928	28,980.20	——	——
1929	3,492.05	——	——

CURRENT EXPENDITUDE: SHANGHAI-NANKING LINE

	Staff Wages	Reporters	Technical Experts	Clerks	Workers
1928	1,130.00	3,872.63	592.00	220.00	653.33
1929	1,117.00	4,118.00	1,414.00	210.00	699.33

	Office Expenses	Purchases	Repairing	Pensions	Others
1928	921.10	12.58	——	24.30	1.94
1929	1,248.11	22.58	——	24.31	——

CURRENT EXPENDITURE: KIANG PEI LINE

	Staff Wages	Reporters	Technical Experts	Clerks	Workers
1928	936.00	8,698.20	160.00	420.00	1,208.60
1929	1,086.00	10,254.35	1,480.00	462.00	1,270.50

	Office Expenses	Purchases	Repairing	Pensions	Others
1928	5,071.73	720.07	175.99	——	45.58
1929	6,472.04	735.42	182.85	——	——

CAPITAL INVESTMENT: SHANGHAI-NANKING LINE

	Purchases	Other Expenses
1928	6,204.21	9,624.07
1929	6,244.35	10,710.15

CAPITAL INVESTMENT: KIANG PEI LINE

	Purchases	Other Expenses
1928	40.14	1,083.08
1929	6,204.21	9,624.07

LOCAL TELEPHONES

Telephone companies operating under the auspices of the Ministry of Communications are 20 in number, of which five are in Kiangsu Province. These are the Nanking Telephone Company, Shanghai Telephone Company, Soochow Company, Chinkiang Company and Kiangtu Company. Private telephone companies in Kiangsu Province are 16 in number, including the cities of Wusih, Wuchin, Nantung, Changshu, Taitsang, Kiangyin, Sungkiang, Kunshan, Shuyang, Taihsien, Shentseh, Tungshan, Kaoyu, Liyang and Tahsing.

TELEPHONE COMPANIES UNDER MINISTRY OF COMMUNICATIONS

Among the telephone companies operated under the Ministry of Communications the Shanghai Telephone Company is the most important, with Nanking coming next, and the Soochow, Chinkiang and Kiangtu Companies following.

The following table shows particulars of various telephone companies in Kiangsu operated under the auspices of the Ministry of Communications, figures being taken from the 1932 report compiled by the Ministry:—

	Operatives	Length of Wire (Km)	Exchanges	Subscribers	Average Daily Calls per Subscriber	Revenue	Expenditure	Capital Investment
Nanking	384	158.84	2,742	2,601	21	$180,770.74	$221,282.29	$66,660.02
Shanghai	323	209.19	2,333	2,163	19	234.448.01	194,679.52	18,966.53
Soochow	179	134.55	1,802	1,768	12	119,209.26	101,176.88	10,026.03
Chinkiang	74	35.76	582	568	14	27,781.80	25,338.53	6,409.10
Kiangtu	64	27.34	306	292	18	17,879.33	22,837.85	——

PRIVATE TELEPHONE COMPANIES

According to 1929 returns compiled by the Ministry of Communications, there were 16 private telephone companies operating in Kiangsu, with the Wusih Telephone Company leading in importance. Particulars of these various companies are shown in the following table:

	Capital	Ownership
Wusih Co.	400,000	Partnership
Wuchin Co.	30,000	"
Nantung Ta Chung Co. ..... (南通大聰)	85,000	"
Changshu Co.	——	——
Taitsang Co.	40,000	Joint Stock
Kiangyin C,.	60,000	" "
Sungkiang Co.	12,600	Joint Stock
Kunshan Co.	20,000	Partnership
Shuyang Co.	——	——
Taihsien Co.	20,000	Partnership
Shentseh Co.	15,000	"
Tungshan Co.	37,500	Joint Stock
Kaoyu Co.	20,000	Partnership
Liyang Co.	10,000	"

CHAPTER V

AVIATION

COMMERCIAL aviation is a new venture in China. Owing to the short mileage of railways in operation and the limited number of highways, the Government has realized the importance of air transportation. Existing commercial services are operated by two aviation corporations, the China National Aviation Corporation (中國航空公司) a Sino-American concern, and the Eurasia Aviation Corporation (歐亞航空公司), a Sino-German enterprise. The following is a brief description of the air routes operated by these two companies within the limits of the Province:—

CHINA NATIONAL AVIATION CORPORATION

The Original National Aviation Company (國立航空公司) was reorganized into the China National Aviation Corporation in 1930, its capital being fixed at $10,000,000, of which $4,000,000 has been paid. It is a Sino-American corporation, operating three routes: Shanghai-Nanking, Shanghai-Peiping, and Hankow-Chungking.

The head office of the China National Aviation Corporation is at 3 Canton Road, Shanghai with branches at Nanking, Ankiang, Kiukiang, Hankow, Shashih, Ichang, Wanhsien, Haichow, Tsingtao, Teintsin and Peiping. The office in Nanking is at Ssu Tiao Hsiang (四條巷), near Hsi Hua Men (西華門); and in Tunghai at Ta Chieh Pai Fang (大街牌坊), near East Gate. The aerodrome in Shanghai is at Lunghua, in Nanking at the terminus of the Chung Shan Road, and in Haichow at Yangyu (楊圩).

Shanghai-Hankow: via Nanking, Anking, Kiukiang.— The fare from Shanghai to Nanking is $48, and with the expection of Mondays a daily service is operated:— Leaving Shanghai, 8 a.m., arriving at Nanking 11:15 a.m., and leaving Nanking 12:50 p.m. and arriving at Shanghai 3.05 p.m. Baggage is limited to 25 pounds for each person.

Shanghai-Peiping: via Haichow, Tsingtao, and Tientsin. —The fare from Shanghai to Tunghai is $75, and $140 return. This service is operated three times a week, Tuesday, Thursday, and Saturday, while Peiping to Shanghai flights are made twice a week, Wednesday and Friday.

Sight-seeing trips were started in 1932, the areas covered being Shanghai, Wuhsien-Shanghai district and the Shanghai-Hangchow area. Tickets should be bought the day previous to the flight, and money is refunded if the flight is cancelled. These excursions are limited to five passengers.

EURASIA AVIATION CORPORATION

The Eurasia Aviation Corporation is organized with Chinese and German capital, and owns six machines. The office in Shanghai is at 15 Jinkee Road, with an aerodrome at Hungjao. In Nanking the office is at 12 Yiang Yu Li (良友里), Ssu Tiao Hsiang with an aerodrome at Mingkukung (明古宮).

The Original plan of the Corporation was to operate two routes, from Shanghai to Nanking via Loyang (洛陽), Hsian (西安), Lanchow (蘭州), Suchow (肅州), Hami (哈密), Tihua (迪化) and Tachen (塔城) a distance of 4,050 kilometers and from Peiping to Tachen, via Loyang. These routes have not yet been open to traffic, and the line actually open is between Nanking and Tihua, via Loyang, Hsian, Lanchow, Suchow, and Hami, a distance of 3,255 kilometers. The fare for a single flight on this section is $1,230.

CHAPTER VII

GODOWNS

AS THE main centre of China's foreign trade, Shanghai naturally leads all other districts in Kiangsu Province in the matter of warehouse accommodation, with Wusih coming next. Storage arrangements in other places are of minor importance.

About a dozen of the larger warehouse in Shanghai are operated by Chinese, and a considerable number of small godowns are owned by Chinese banks, cash-shops, and individuals, and by foreign merchants.

The following list shows the names and storage capacity of the Chinese-owned warehouses in Shanghai:—

	Godown Capacity (Tons)	Open Storage (Tons)
C.M.S.N. Co. Kin Li Yuan (招商局金利源碼頭)	10,000	——
C.M.S.N. Co. Central Wharf (招商局中棧)	13,000	——
C.M.S.N. Co. Lower Wharf (招商局北棧)	28,000	——
Yangkiatu Wharf Co. (楊家渡碼頭)	18,000	20,000
Ningshao Wharf Co. (寧紹碼頭)	30,000	——
North Ningpo Wharf Co. (北寧波碼頭)	30,000	12,000
Hung Hseng Wharf Co. (鴻升公司)	6,000	8,000
Hung An Wharf Co. (鴻安碼頭)	2,000	30,000
I Tai Hsing Wharf Co. (義泰興)	30,000	90,000
Kailan Mining Administration Wharf Co. (開灤局)	——	213,000
Others	——	37,000
Total	210,000	213,000

BANK WAREHOUSES

	Capacity (Tons)
Shanghai Warehouse No. 1	3,420
„ „ No. 2	4,500
„ „ No. 3	3,300
Bank of Kiangsu Warehouse No. 1	3,900
„ „ „ No. 2	3,600
„ „ „ No. 3	3,400
Commercial Bank of China Warehouse	2,000

The "Shanghai Warehouses" are operated jointly by the Bank of China, Bank of Communications, National Commercial Bank, Chekiang Industrial Bank, Yienyieh Commercial Bank, and Shanghai Commercial and Savings Bank.

FOREIGN WAREHOUSES IN SHANGHAI:

	Nationality	Godown Capacity (Tons)	Open Storage (Tons)
Nippon Yusen Kaisha	Japanese	25,000	——
„ „ „	„	40,000	8,000
„ „ „	„	30,000	30,000
Osaka Yusen Kaisha	„	17,000	35,000
Mitsui Bussan Kaisha	„	——	90,000
Kayosha Yangtszepoo Wharf	„	17,000	8,000
Daisho Yoko I-Chang Wharf	„	6,000	20,000
Ryoka Soko Tungkiatu Wharf	„	——	70,000
„ „ „ „	„	40,000	15,000
Nisshin Kisen Kaisha Laopaitu Wharf	„	40,000	25,000
Dairen Kisen Kaisha Wharf	„	17,000	40,000
Shanghai Hongkew Wharf Co.			
Hunt Wharf	British	27,000	3,000
Hongkew Wharf	„	52,000	1,000
Pootung West Wharf	„	15,000	4,000
Butterfield & Swire's			
Whatung Wharf	„	25,000	15,000
Pootung Wharf	„	23,000	15,000

Eastern Wharf	British	25,000	——
Blue Funnel Line Holt's Wharf	„	90,000	——
Mackenzie's Wharf	„	25,000	——
Dollar Line Wharf	American	15,000	40,000
East American Petroleum Upper Wharf	„	23,000	15,000
Lower Wharf	„	25,000	——
Standard Oil Co. Wharf	„	50,000	——

WAREHOUSES IN OTHER DISTRICTS

Warehouses in other districts of Kiangsu Province are much smaller and their equipment less modern than those in Shanghai. There are nine silk and cocoon warehouses and 30 grain warehouses in Wusih. In Wuchin there are only five grain warehouses, but in both cities there are a number of warehouses owned by banks and cash-shops for storing merchandise held as security against advances of cash. The following is a list of warehouses in Kiangsu Province outside Shanghai:—

	Location	Established	Capital
Yuan Shen (源慎)	Wusih	1909	$ 4,500
Fu Yu (福裕)	„	1915	5,000
Chien I (乾益)	„	1914	10,000
Ta Yu (大有)	„	1911	10,000
Jui Chang Shun (瑞昶潤)	„	1914	240,000
Shen Teh (慎德)	„	1916	3,000
Hsieh Chen (協成)	„	1912	4,000
Hung Ta (宏大)	„	1919	4,000
Jen Chang (仁昌)	„	1930	6,000
Pei Sui Seng (北瑞生)	„	1923	5,000
Ming I (民益)	„	1921	4,500
Sheng Ho (生和)	„	1908	4,000
Hung Jen (宏仁)	„	1896	6,000

Hsing Jen (興仁)	Wusih	1876	5,000
Kuang Jen (廣仁)	"	1928	6,000
Shen Teh (慎德)	"	1909	4,000
Fu Sheng (復生)	"	1871	4,000
Teh Hsing (德新)	"	1910	3,000
Fu Kang Jen (福泉潤)	"	1916	4,000
Chen I (增益)	"	1918	3,000
Ta Yuan (達源)	"	1896	1,500
Fu Yuan (福源)	"	1928	5,000
Lai Feng (泰豐)	"	1921	2,000
I Yuan (益源)	"	1920	4,000
Sih Fung (錫豐)	"	1931	4,000
Fu Chen (復成)	"	1874	3,000
Teh Kang Jen (德康潤)	"	1930	4,000
Tung Jen (同仁)	"	1921	1,000,000
Chen Tai (成泰)	"	1927	2,000
Lung Yuan (隆源)	"	1929	2,000
Chu Chen (聚成)	"	1916	2,000
I Chang (義昌)	"	1929	2,000
Yuan I (元益)	"	1930	2,000
Yu Hsing (餘新)	"	1924	2,000
Chen Nan (振南)	"	1920	2,000
Chen I (振益)	"	1915	2,000
Huang Wan I (黃萬益)	"	1917	2,000
Chiu Yu Hsing (邱裕興)	"	1915	1,000
Kung Shen (公慎)	Wuchin	1930	20,000
Chien Yuan (乾元)	"	1922	20,000
Kung Mou (公茂)	"	1930	9,000
Kung Hsing (公信)	"	1912	30,000
Jui Yuan (瑞源)	"	1931	10,000

BANK WAREHOUSES

The following warehouses are established by various banks and other financial organizations, but have no fixed capital and are not maintained as independent enterprises:

	Location	Established	
Kiangsu Warehouse	Nantung	1929	Controlling Organization. Bank of Kiangsu
Ta Shu Chi (大豆棧)	"	1921	Shanghai Commercial and Savings Bank
Ta Shu Chai	Haimen	1921	Shanghai Commercial and Savings Bank
Food-Control Commission (食糧管理委員會)...	Hsiaohsien	1929	Food-Control Commission of Hsiaohsien
Food-Control Commission	Suchien	1932	Food-Control Commission of Suchien
Tungshan Bank of China Warehouse	Tungshan	1931	Bank of China
Tungshan Bank of Communications Warehouse	"	1931	Bank of Communications
Kuo Ming Bank Warehouse	"	1932	Kuo Mink Bank
Food-Control Commission	Peihsien	1931	Food-Control Commission of Peihsien
1st Warehouse, 11th Section Farmers' Bank	Jukao	1931	Farmers' Bank
1st Warehouse of the Farmers' bank	Pengniu (彭牛)	1930	Farmers' Bank of Changchow
2nd Warehouse of the Farmers' bank ...	Fuchi (復溪)	1930	Farmers' Bank of Changchow
Food-Control Commission	Tanyang	1931	Food-Control Commission of Tanyang
Farmers' Bank Warehouse	Kunshan	1931	Farmers' Bank
Kunshan Bank Warehouse	"	1913	Kunshan Bank
Postal Remittances and Savings Bank Office	"	1930	Postal Remittance and Savings Bank
Farmers Bank Warehouse	Tsingpu	1930	Farmers' Bank
Wukiang Grain Warehouse	Wukiang	1930	Farmers' Bank of Wukiang
Pingwang Grain Warehouse	Pingwang (平望)	1930	" " "
Chentseh Grain Warehouse	Chentseh (震澤)	1929	" " "
Yenmu Grain Warehouse	Yenmu (嚴墓)	1930	" " "

CLASSIFICATION OF WAREHOUSES

Warehouses in Kiangsu Province are classified into six groups, as follows:—

1. **Wharf warehouses.**—These are established by shipping companies for convenience in handling cargo.

2. **Railway warehouses.**—These are established by railway administrations for the convenience of owners of goods transported by rail, and are usually situated near railway-stations. These warehouses assume no responsibility for goods stored, as no charge is made for the temporary storage of goods.

Bank Warehouses.—Banks and cash-shops usually provide warehouses for storing goods offered as security against advances.

Independent warehouses.—These provide storage for goods awaiting sale, storage charges being their principal source of revenue.

Private Warehouses.—These are established by manufacturers and merchants for the storage of their own goods exclusively.

Bonded Warehouses.—These are wharf warehouses permitted by the Customs Administration to store cargoes bonded against payment of duties. Goods stored in these warehouses are considered to be not imported until taken out by the consignee, consequenlty Customs declaration is made at the time delivery is required.

In addition to the six groups mentioned, there are private warehouses established by wholesale merchants or hotels for the convenience of their customers. They are governed by no regulations, and no charge is made for goods stored therein.

STORAGE ROUTINE AND REGULATIONS

The usual procedure followed in receiving, storing, and discharging goods is as follows:—

1. **Receiving.**—After the Customs formalities have been completed and duties paid, goods may be removed from the ship's wharf to warehouses. A list giving particulars of numbers, marks, packing, together with the date and name of the consignee, is sent to the warehouse office, which then issues a godown-warrant, which is negotiable.

2. **Storing.**—In accepting goods for storage, the following regulations are usually observed:—

A warehouse company is not responsible for the contents of packages or cases stored therein.

A warehouse company is not responsible for damage due to such causes as changes of weather, war, strikes, and other consequences of *force majeur*.

A warehouse company is not responsible for damage due to deterioration.

A warehouse company may place a part or the whole of the goods handed over for storage in any part of the warehouse.

Goods once stored in a warehouse are released only upon the presentation of the godown-warrant.

If the owner of goods wishes to insure against fire, the cost of such cover must be paid by him.

The person holding the godown-warrant is regarded as the lawful owner of the goods stored.

Storage charges are payable monthly.

3. **Delivery.**—Goods are released from storage upon the presentation of the godown-warrant. A note containing a description of the goods to be delivered, is then sent to the godown-keeper, who permits the goods mentioned to be taken out. Goods bonded pending payment of Customs duties are naturally released only under Customs authority.

In addition to storage charges, the owner of goods usually pays for carting to and from the warehouse. Generally, a reduced storage rate is allowed for goods that

have been kept in a warehouse for more than one month. In the case of wharf warehouses, 10 days' free storage is usually allowed by the ship's agents after the arrival of a vessel.

Bank warehouses are used solely for the purpose of storing goods held as security.

Railway warehouses are similar to wharf warehouses, being established for the convenience of owners in loading and unloading freight. Usually, inward goods are allowed two days' free storage, to and outward freight four days. If the goods are of a nature which allows them to be stored in the open, the time limit is extended to twice these periods. When goods are stored beyond these limits a charge of five cents per ton per day is charged for those stored under cover, and 1.25 cents for those kept in the open. An allowance of 20 per cent is made if goods are stored more than 12 months. Loading is done by the owner, but if desired the railway will do this at his expense and risk.

A godown-warrant issued by a warehouse of good standing is commonly accepted as security by banks, and ordinarily a loan can be obtained equivalent to from 50 to 80 per cent of the value of goods offered as security.

CHAPTER VIII

CUSTOMS BROKERS AND PROCEDURE

CHINESE merchants, like business-men in other countries, find it difficult and inconvenient to attend to the complicated detail of Custom formalities, and Customs brokers make it their business to handle all this complicated procedure for a small commission. In China Customs brokers are classified into three groups:—

1. Ordinary Customs brokers.
2. Shipping companies which act as Customs brokers.
3. Customs brokers who have special contracts with shipping companies.

Goods handled by one of these brokers are confined solely to freight carried by the ships of the company which has a contract with him. Freight charges are settled three times a year, and if the total exceeds a certain amount within a definite period, a special rebate is given the broker by the company. On the other hand, the broker must secure a definite volume of freight for the shipping company and guaranttee payment of freight. As this arrangement is very advantageous to shipping companies, it is observed by many of them.

Brokers who handle business for merchants from northern ports are called Peiyang group, while those handling business between Yangtse ports are known as the Chankiang group, and those concentrating on the Southern ports form the Nanyang group. Most brokers, however, will handle business for anybody, and these men are called the Tungtien group (通天幇).

In addition to handling Customs formalities for their customers, these brokers undertake the loading and unloading of cargo, and if necessary arrange temporary warehouse accommodation.

A broker usually pays the Customs duty on goods for the owner before collecting this amount from the latter, consequently, he needs a considerable amount of capital. In Shanghai at least Tls. 10,000 is considered necessary to begin business as a Customs broker.

In handling imported goods the broker acting for the consignee sends in an import application together with the bill of lading or delivery order to the Numbering Desk in the general office of the Custom House. A number is then given to the application, which is sent to the Import Desk, where it is stamped for examination. If the invoice and other documents satisfy the Customs official, the goods may be passed free of examination. Alternatively, after examination, if everything is found, in order, the application passes on to the Duty Memo Desk, where the amount of duty payable is calculated, the dues being filled in at the Wharfage and Conservancy Dues Desk. A duty memo is then issued, and the applicant pays the stated amount and gets a receipt which, when presented to the Import Desk, release the bill of lading or delivery order, stamped with the Customs seal on being handed back to the applicant, who may now take delivery of the goods. A pass, which enables the importer to re-export the goods duty-free, is also issued.

In handling export shipments, certain goods must be examined by the Bureau of Inspection and Testing of Commercial Commodities. This being satisfactory, the broker fills up an export application attaches it to the shipping order, and sends it to the Numbering Desk at the Custom House. It is then passed to the Drawback Desk to be stamped for examination, and when the goods have been examined, the application is sent to the Duty Memo Desk where calculation of duty is made. Port dues are also entered by the Wharfage and Conservancy Desk. The broker pays the amount stipulated and gets a receipt, which is sent to the Duty Memo Desk. If everything is found in order, the export application, together with the shipping order and receipt, will be passed to the Wharfage and Conservancy Dues Desk where the amount of dues is noted, and the documents are sent to the Export Desk for stamping. The applicant then gets back his shipping order, and is authorised to load the goods for export.

On re-exported consignments no Customs duty or wharfage dues are levied within a certain period of time, but on arriving at port of final destination, duties must be paid.

Formerly, when the likin system was in existence, Customs brokers arranged all the declaration formalities with regard to the Native Customs, but as this system has been abolished, goods can be passed into the interior duty free.

CHAPTER IX

EXPRESS COMPANIES

WATER transportation is usually handled by freight brokers specialising in that work, while land transportation, particularly carriage by rail, is carried on by express companies. Before the railways came into existence, rivers and canals were the main channels for the transportation of freight, but when railways were built, they were very quickly patronized by the merchants of Kiangsu Province, though the regulations governing railway transportation are so detailed and strict that merchants find it difficult to follow them. Furthermore, there was no joint transportation system of working between the various railways, and merchant had to make two or more contracts to cover one consignment. On account of this drawback, Mr. Hung Shao-pu, well-known in native bank circles, organized the Ta Tung Express Company to transport silver currency by rail for the Kiangsu banks. Later, when the northern section of the Tientsin-Pukow railway was completed, many other express companies came into existence, and their activities were not limited to the handling of currency. These companies enjoyed a period of considerable prosperity, but in recent years, owing to political disturbances in the country, railway traffic has been frequently interrupted by military operations, causing considerable losses to the express companies.

Since 1932, when the Ministry of Railways decided that the various railway administrations were to shoulder all the usual risks incurred in carrying merchandise, the express companies have lost much of their former usefulness. On account of the high cost of railway transportation, however, these companies are trying to extend their activities into a new field—that of water transport. A sum of $200,000 has been raised by the Express Companies Association to hire steamships for this purpose, and it is expected this enterprise will be patronized by many

merchants, as the cost of water transport is only about two-thirds that of land transport, while the time required is not much longer.

An express company is usually divided into five departments—manager's office, accounting department, business soliciting, loading and unloading department, and warehouse.

The business soliciting department is the most important, a number of brokers being employed to approach likely customers for business.

The loading and unloading department handles all goods to be transported, secures wagons, makes out Customs and other declarations and transacts all other formalities with the railway administration. This work is generally done by a department chief called the "platform manager," assisted by three or four others.

The larger express companies are registered at the railway offices. If within a certain period the freight paid by an express company exceeds a certain amount, the railway allows a rebate of from two to five per cent to the express company.

A railway accepts no responsibility for damage done to goods in transit unless an insurance fee of 10 per cent of the value has been paid. When the services of an express company are engaged, the shipper enjoys many advantages, for in addition to bearing all responsibility for damage and advancing freight and other charges, an express company takes care of the goods during the whole journey and when railway traffic is badly congested usually manages to secure wagons for the goods of its own customers.

The filling-up of Customs and other declarations is also very inconvenient to most merchants, but if this work is done by an express company, it saves the shipper a lot of trouble and anxiety.

When an express company receives goods from a customer, they are put into the railway warehouse, where they are weighed, counted, and marked. After a receipt is obtained the express company checks up the weight and other details, and if everything is in order, a bill of lading is issued. If the goods are to be sold C. O. D., it is the

usual practice for the company to advance the amount. Freight is computed and made known to the shipper. The "platform manager" provides wagons for the goods, which is a task of considerable difficulty when traffic on the railway happens, to be heavy. A description of goods, together with their weight and number, is sent to the station-master in the name of the express company if it is registered in the railway office, and a company not so registered must use the name of one that is. A bill of lading is then issued by the railway office to the express company, which sends it on to the place of destination.

Upon arrival the agent of the express company takes charge of the goods upon presenting the bill of lading, and the goods are stored in the railway warehouse until the consignee claims them.

In undertaking through transportation, an express company extends its services places beyond the railway zone, provided the destination can be reached by water. All the work of discharging and re-loading freight is taken care of by the company.

The fees charged by an express company are based upon the freight rate of railways plus incidental expenses, like local taxes, etc. Freight rates are fixed according to the value and weight of goods, but in some cases are determined by the space occupied, as in the case of cotton. An express company usually charges its clients as much as possible, and consequently rates are not fixed, but determined by circumstances. By co-operation with other companies and skilfull management, an express company may make a handsome profits while clients pay less than if the services of the company were dispensed with.

Railway warehouses are established for the convenience of customers, and no fee is charged for goods stored therein. When an express company transports a very large quantity of goods and the ordinary warehouse proves too small, special store-rooms can be rented from the railway at very low cost. Accounts between customers and an express company are settled monthly or three times a year, no interest being charged, but when the C. O. D. price of goods is advanced to the owner by the company, interest is charged in accordance with the prevailing bank-rate.

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ERRATA

Page	Paragraph	Line	Original	Correction
12	1	5	southwest	northwest
12	3	1	ranges	range
52	2	3	transitting	transshipping
73	1	1	in	at
82	—	26	East	West
103	1	3	there 7	there are 7
104	2	9	on	in
122	5	3	200,000	$200,000
134	1	7	Provinces	Province
142	—	25	110,000	358,000
145	2	5	unhulled	hulled
145	2	7	unhusked	husked
155	—	25	1,460,000	1,468,000
155	—	35	63,000	630,000
167	4	3	were	where
171	2	10	133,000	132,000
171	2	21	123,000	121,000
171	2	30	493,000	492,000
172	—	4	1,226,000	1,316,000
172	—	25	68,000	86,000
172	umn 2	26-37	——	000 omitted
172	—	38	19,331,000	19,332,000
173	1	7	output (in *shih*) output	output (in *shih*)
174	—	31	112,487,501	12,224,401
175	—	10	7,247,000	7,246,000
175	—	11	3,337,000	3,335,000
175	—	16	42,421,000	45,421,000
175	—	32	96,149,000	208,643,000
176	—	5	208,643,000	96,149,000
176	—	11	395,255,000	2,272,234,020
178	1	3	to meet and are their own demands	to meet their own demands and are
183	1	1	given	give
213	2	2	vallies	valleys
216	3	7	adopted	adapted
220	6	7	orangs	oranges
239	2	5	built	build
247	4	1	is land	island
249	2	8	which	while
256	6	2	a	the
257	1	6	owing	owning
258	3	5	fish only dried	fish is only dried
287	3	1	coal	iron

Page	Paragraph	Line	Original	Correction
315	3	12 & 13	Kuang Feng (廣豐)	Ching Feng (慶豐)
317	3 (column 5)	3	5	4
317	3 (column 5)	12	106,346	105,346
318	3	6	49	48
325	—	last line	21	20
327	1	3	1027	1927
330	4	3	making linen	making imitation linen
330	5	3	do	does
340	4	9	3.64	2.64
371	table	17(column 6)	——	4
371	„	17(column 8)	162	166
387	„	10	500-1,000	501-1,000
388	9	1	(單綱)	(單總)
389	1	1	(雙綱)	(雙總)
413	1	6	more than 3,000 looms more than 3,000 looms operating	more than 3,000 looms operating
437	—	last line	$7,000-$8,000	$7,001-$8,000
414	3	10	most	mostly
481	2	5	concern closed	the concern closed
481	2	10	meet	met
485	2	1	other used	other materials used
486	3	13	Hk. Hls.	Hk. Tls.
508	3	3	then	their
523	2	2	mils	mills
523	3	7	piec-work	piece-work
524	2	5	rice-miling	rice-milling
524	2	7	uiculs	piculs
525	3	6	different of rice	different kinds of rice
526	5	2	custoomers	customers
526	5	3	cients	clients
544	3	3	Shanghai.	Shanghai.
577	last	14	——	whole line deleted
559	2	9	of	or
568	4	4	again	against
570	2	2	bus	but
571	1	5	poultry-farmers	poultry-farms
589	2	2-3	Ken Tai (根泰) and Ho Hoh (和合) companies	Ken Tai (根泰) Company
645	3	5	this	thus
674	2	1	mattre	matter
675	1	5	obtained	obtain
678	3	8	this	these
706	2	1	metal-workers	metal-works
709	2	3	*his pei*	*hsi pen*

Page	Paragraph	Line	Original	Correction
710	3	3	Southern	Northern
752	3	1	Expanses	Expenses
789	3	2	inspecting intended	inspecting pictures intended
789	3	3	Settlement, pictures and	Settlement, and
789	4	6	lad	led
790	2	3	the Tien I Co.,	the Unique Film Co.,
799	3	1	and is cut	and the ground is cut
809	1	5	to make enamelware	began to make enamelware
829	3	2	bdx-making	box-making
843	3	4	scpindles	spindles
896	1	6	relation the	relation to the
907	1	1	hows	shows
911	1	5	most	more
931	1	12	prominant	prominent
954	1	14	descretion	discretion
966	2	10	tine	line
997	4	10	wiht	with
1006	3	13	section, of which.	section, which
1016	2	9	seacon	season
1017	6	1	river	rivers
1038	1	4	(郵郵員)	(郵務員)
1057	2	8	Chishui	Fanshui